ASSESSMENT OF MORNING BLOOD PRESSURE SURGE AND NOON BLOOD PRESSURE AMONG CHILDREN

DISSERTATION SUBMITTED TO

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THEDEGREE OF MASTER OF SCIENCE IN NURSING

CHILD HEALTH NURSING

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CERTIFICATE

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(SHINY.S)

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ABSTRACT

A study to assess the morning blood pressure surge and noon blood pressure among children in selected schools at Kanyakumari district.

Quantitative research approach with Prospective research design was adopted. Samples were selected from L.M.S Girls Higher secondary School, Neyyoor, Myrna memorial higher secondary school, Bethelpuram, and C.S.I matriculation school was adopted for this study. By using purposive sampling techniques 30 samples were

selected for this study.Screening was done for all the students. High blood pressure children were selected and monitored morning blood pressure surge and noon blood pressure for four consecutive days. The data gathered were analyzed by descriptive and inferential statistics and interpretation were made on the basis of the objectives of the study.

Distribution of demographic variables according to age 17(56.67%) belongs to the age between 14-15years, 13(43.33%) belongs to the age between 16-17 years. Regarding sex 14(46.67%) belongs to male and 16(53.33%) belongs to female. With regard to religion 12(40%) belongs to Hindu and 18(60%) belongs to Christian. Regarding educational status 15(50%) were 9-10^{th} standard and15 (50%) were 11-12^{th}standard. With regard to residential area 16(53.33%) belongs to urban area, 14 (46.67%) belongs to rural area. Regarding monthly income of the parents 16(53.33%) belongs to below Rs.10, 000, 10 (33.34%) belongs to Rs. 10,001-20,000, 4 (13.37%) belongs to above 20,001. Regarding diet pattern 30(100%) belongs to non vegetarian diet. With regard to family history of blood pressure 11 (36.67%) had past history, 19(63.33%) belongs to no past history of blood pressure.

There was a positive correlation found between morning blood pressure surge and noon blood pressure. Hence when the morning blood pressure increases,the noon blood pressure also increases. So the research hypothesis (H_1) is accepted.

The demographic variables such as age, sex, education, residential area and income of the parents and clinical variables such as diet pattern and family history of hypertension. In morning blood pressure surge and noon blood pressure of family history of hypertension in clinical variable, the calculated value 8.29 which is significant at $p>0.05$. Hence research hypothesis (H_2) is accepted. As per this study the researcher concludes that when the morning blood pressure increases, the noon blood pressure also increases among children.

CHAPTER - I

INTRODUCTION

The past few decades, there has been a reawakening that health is a fundamental human rights and a worldwide social goal, that is essential to the satisfaction of human basic needs and to an improved quality of life; that it is to be attained by all people. The most common hereditary diseases which are prevailing in Indian population are hypertension, diabetes mellitus, cardiac diseases, and tuberculosis. Among these diseases hypertension is most rarely seen in children.

Adolescence is a transitional stage of physical and psychological human development that generally occurs during the period from puberty to legal adulthood . The period of adolescence is most closely associated with the teenage years, though its physical, psychological and cultural expressions may begin earlier and end later. A thorough understanding of adolescence in society depends on information from various perspectives, including psychology, biology, history, sociology, education, and anthropology. Within all of these perspectives, adolescence is viewed as a transitional period between childhood and adulthood, whose cultural purpose is the preparation of children for adult roles. Although adolescence and young adulthood are generally healthy times of life, several important public health and social problems either peak or start during these years. They are obesity, stress, life style changes, Homicide, Suicide, Motor vehicle crashes, including those caused by drinking and driving, Substance use and abuse, Smoking, Teen and unplanned pregnancies, Homelessness.

Hypertension is a common chronic disease in children. Paediatric hypertension may be secondary to another disease process or it may be essential hypertension. Secondary hypertension is more common in children than in adults, and common causes of hypertension in children include renal disease, coarctation of the aorta, and endocrine disease. However, as with adults, the majority of children and adolescents with mild to moderate hypertension have primary hypertension in which a cause is not identifiable. Hypertension in children has been shown to correlate with family history of hypertension, low birth weight, and excess weight. With the increasing prevalence

of childhood weight problems. Increased attention to weight-related health conditions including hypertension is warranted. Several lines of evidence suggest that blood pressure in US children and adolescents is increasing in parallel with weight. Although long-term sequelae such as myocardial infarction, heart failure, stroke, and kidney disease rarely manifest in children, hypertension during childhood has been shown to be an independent risk factor for hypertension in adulthood, and to be associated with early markers of cardiovascular disease, including left ventricular hypertrophy, arterial compliance, atherosclerosis, and diastolic dysfunction.

Hypertension is the term used to describe high blood pressure. Blood pressure is the measurement of the force against the walls of the arteries as the heart pumps blood through the body.

Hypertension is the most powerful risk factor for the cardiovascular diseases, including stroke, coronary artery disease, heart failure, chronic kidney disease, aortic and peripheral arterial diseases. There is a significant variability in blood pressure level among hypertensive; however, the diagnosis of hypertension and the therapeutic target of blood pressure are based on the average of each blood pressure measured. There is marked diurnal variation in the onset time of cardiovascular events, with the peak being exhibited in early morning. Blood pressure also exhibits a similar diurnal variation, with a decrease during sleep and a surge in the morning.

This characteristics morning surge in blood pressure is thought to occur through an elaborate system known as the rennin angiotensin system that operates with in the kidney and adrenal glands. This complex system controls the concentration of sodium in the blood stream and the tone of the blood vessels. In the morning, this system becomes more active, resulting in more sodium and water maintained within the blood stream and contraction of the blood vessel muscular walls. This process increases blood pressure.

The morning pressure surge is thought to be related to the body's circadian rhythm. During this time, increases in cortisol and activation of the renin-angiotensin-aldosterone system enhance coronary artery sensitivity to catecholamines (adrenaline and noradrenaline) and elevate systemic vascular resistance. Even in patients with well-controlled blood pressure, 50% still have morning hypertension. The morning

pressure surge is seen between the hours of 6 am and noon. The risk of cardiovascular events in the morning may be due to an increase in platelet aggregation, hematocrit, and fibrinogen levels, which create a thrombogenic environment. It is postulated that arterial thrombosis may be caused by hemodynamic forces from shear stress on arterial plaques, therefore leading to their rupture. Data from the Framingham Heart Study suggest that the risk of sudden cardiac death is 70% higher during the period between 6 am and 9 am, compared with other times of the day.

Morning blood pressure increases when we wake up due to the body's normal circadian rhythm. Circadian rhythm is a 24 hours cycle that affects our sleep or wake patterns. In the body releases hormones such as adrenaline and noradrenalin. These hormones give boosts of energy but can also rise in blood pressure. The morning blood flow increase in blood pressure is usually seen between 6.00 a.m. and noon. If the blood pressure too high it can cause harmful effects.

Morning blood pressure surge is one of the components of diurnal blood pressure variability, and normal morning blood pressure surge is physiological phenomenon. However, exaggerated morning blood pressure surge is pathological. In addition to 24-hours persisted pressure overload, dynamic blood pressure variability from the lowest level during sleep to peak early in the morning would contribute to cardiovascular continuum from early stage of subclinical vascular disease to the final trigger of cardiovascular events.

BACKGROUND OF THE STUDY

In children, the definition of hypertension is based exclusively on frequency-distribution curves for blood pressure. As a consequence, estimates of the prevalence of paediatric hypertension lack a scientific basis. The number of children who might be defined as having hypertension and the frequency with which they develop complications during adulthood remain unknown. However, recent evidence indicates that hypertension in adults originates in childhood, because childhood blood pressure predicts blood pressure in the adult**.**

Kazuomi kario (2004) studied the association between the alpha adrenergic morning surge in blood pressure and silent cerebrovascular disease in children with hypertension. They monitor ambulatory blood pressure three times in hypertensive

patients in whom the presence of silent cerebral infarcts was assessed by magnetic resonance imaging. The morning blood pressure surge was calculated as the mean systolic blood pressure during the 2 hours after waking minus the mean systolic blood pressure during one hour that included the lowest level of blood pressure. The morning blood pressure surge particularly that dependent on alpha adrenergic activity is closely associated with advanced silent hypertensive cerebrovascular disease.

Blood pressure usually increases upon awakening a physiological mechanism called morning blood pressure surge. Blood pressure values above the morning blood pressure surge threshold are associated with target organ damage including left ventricular hypertrophy and proteinuria. Despite these data, there have been no studies that have investigated the association between elevated morning blood pressure surge and the development of incident chronic kidney disease.

The development of a national database on normative blood pressure levels throughout childhood has contributed to the recognition of elevated blood pressure in children and adolescents. The epidemic of childhood obesity, the risk of developing left ventricular hypertrophy, and evidence of the early development of atherosclerosis in children would make the detection of and intervention in childhood hypertension important to reduce long-term health risks; however, supporting data are lacking.

Secondary hypertension is more common in preadolescent children, with most cases caused by renal disease. Primary or essential hypertension is more common in adolescents and has multiple risk factors, including obesity and a family history of hypertension. Evaluation involves a thorough history, physical examination, laboratory tests, and specialized studies. Management is multifaceted. Nonpharmacologic treatments include weight reduction, exercise, and dietary modifications. Recommendations for pharmacologic treatment are based on symptomatic hypertension, evidence of end organ damage, stage 2 hypertension, stage1 hypertension unresponsive to lifestyle modifications, and hypertension with diabetes mellitus.

The prevalence and rate of diagnosis of hypertension in children and adolescents appear to be increasing. This is due in part to the increasing prevalence of childhood obesity as well as growing awareness of this disease. There is evidence that

childhood hypertension can lead to adult hypertension. Hypertension is a known risk factor for coronary artery disease in adults, and the presence of childhood hypertension may contribute to the early development of coronary artery disease. The development of national database reports showed that early development of atherosclerosis does exist in children and young adults and may be associated with childhood hypertension.

Patients with severe cases of childhood hypertension are also at increased risk of developing hypertensive encephalopathy, seizures, cerebrovascular accidents, and congestive heart failure. Based on these observations, early detection of and intervention in children with hypertension are potentially beneficial in preventing long-term complications of hypertension.

National High Blood Pressure Education Program Working Group on High Blood Pressure in Children and Adolescents released fourth report and recommended for diagnosis, evaluation, and treatment of childhood hypertension is essential.

Globally, the overall prevalence of raised blood pressure aged 18 was around 22% in 2014. Across the WHO regions, the prevalence of raised blood pressure was highest in Africa, where it was 30% for both sexes combined as well as for men and women separately. The lowest prevalence of raised blood pressure was in the WHO Region of the Americas at 18% for both sexes. Men in this region had higher prevalence than women (21% for men and 16% for women).

Recent studies from WHO (India) have shown the prevalence of hypertension to be 25% in urban and 10% in rural people in India. According to the WHO 2008 estimates, the prevalence of raised blood pressure in Indians was 32.5% (33.2% in boys and 31.7% in girls). However, only about 25.6% of treated children had their blood pressure under control, in a multicenter study from India on awareness, treatment, and adequacy of control of hypertension. WHO 2011 non communicable disease India specific data portray a grim picture for the 17.8% of the world's population who reside in India. Previously, a systematic review on the prevalence of hypertension in India, for studies published between 1969 and July 2011, reported a range between 13.9 to 46.3% and 4.5 to 58.8% in urban and rural areas of India, respectively.

In **United States the Fourth Report of task force on blood pressure control in children** introduced a new category, prehypertension, which is diagnosed when a child's average blood pressure is above the 90th percentile but below the 95th. Any adolescent whose blood pressure is greater than 120/80 mm Hg is also given this diagnosis, even if the blood pressure is below the 90th percentile. This classification was created to align the categories for children with the categories for adults from the recommendations of the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure.

SIGNIFICANCE AND NEED FOR THE STUDY

Among adolescents with high risk Blood Pressure values, including those designated from a single measurement as having pre-hypertension and hypertension combined, 68% of boys and 43% of girls had developed pre hypertension or hypertension 2 years later.

Kaplan (2000) conducted a study among 1,505 children aged 5–14 years demonstrated tracking of systolic and diastolic blood pressures over 15 years, with statistically significant correlation coefficients between childhood blood pressure and later blood pressure levels. 116 young adult participants who had developed hypertension, 48% and 41% had suffered elevated childhood systolic and diastolic blood pressures, respectively.

According to National high blood pressure education program normograms in India, the majority of children (74.7%) were underweight and 5.2% had systolic and/or diastolic blood pressure values higher or equal to the 95th percentile. Hypertension had a high prevalence both in underweight children (4.3%) and in normal-weight children (6.9%) and significantly increased in the rare overweight children (4/20, 20%).

According to the **World Health Statistics 2012 report**, India has low rates of hypertension compared to world figures. Here, 23.10% male children and 22.60% female children above 12years suffer from hypertension. India also fares better than the global average of 29.20 in male and 24.80 in female respectively.

The **National Health and Nutrition Examination Survey (2012)** reported an association between blood pressure and body mass index (BMI), suggesting that obesity is a strong risk factor for developing childhood hypertension. There are insufficient data that define the role of race and ethnicity in childhood hypertension, although results of several studies show black children having higher blood pressure than white children. Heritability of childhood hypertension is estimated at 50 percent. .

Dr Cheryl L Tran paediatric nephrologists stated that paediatric hypertension hospitalization is rising and the fraction of charges attributed to hypertension is increasing."

Kelligibson, et al., (2007) presented a article about Blood pressure varies throughout the day depending on foods eaten physical activity and emotional stress. Unfortunately for some people their blood pressure may be too high in the morning and have found that morning hypertension increase the risk of heart and blood vessel problems such as stroke. Even in patients with well controlled blood pressure, 50% still have high morning blood pressure.

The **World Health Organization is developing a Global Plan of Action, for 2013-2020,** to provide a roadmap for country-led action for prevention and control of non-communicable diseases. One of the targets envisaged is a substantial reduction in the number of people with raised blood pressure. Hypertension is a silent, invisible killer that rarely causes symptoms. Increasing public awareness is key, as is access to early detection. Raised blood pressure is a serious warning sign that significant lifestyle changes are urgently needed. People need to know why raised blood pressure is dangerous, and how to take steps to control it.

When the researcher went for a school health programme, researcher found that many children affected with high blood pressure. So the researcher interested and identified the children with morning blood pressure surge and correlate with noon blood pressure.

STATEMENT OF THE PROBLEM

A study to assess the morning blood pressure surge and noon blood pressure among children in selected schools at Kanyakumari District.

OBJECTIVES

- To assess the morning blood pressure surge and noon blood pressure among children.
- To find out the correlation between the level of morning blood pressure surge and noon blood pressure.
- To associate morning blood pressure surge and noon blood pressure with the selected demographic and clinical variables.

HYPOTHESES

H_1: There is a significant correlation between the morning blood pressure surge and noon blood pressure.

H_2: There is a significant association between morning blood pressure surge and noon blood pressure with the selected demographic and clinical variables.

OPERATIONAL DEFINITION

Assess

Monitoring the blood pressure in the morning (6.00 am) and noon (12.00 noon) with the help of sphygmomanometer

Morning blood pressure surge

Morning blood pressure surge refers to marked increase in blood pressure among children between the age group of 14-17 years with the help of sphygmomanometer at 6.00 am.

Noon blood pressure

Noon blood pressure refers to measurement of blood pressure among children between the age group of 14-17 years with the help of sphygmomanometer at 12 noon.

Children

The adolescents were in the age group of 14-17 years found with increased blood pressure.

ASSUMPTION

- Blood pressure surge may lead to hypertension in childhood.
- Morning blood pressure surge may cause serious illness such as stroke and cardiovascular disease in adulthood

DELIMITATIONS

- The study was conducted in Myrna memorial higher secondary school, Bethelpuram, L.M.S higher secondary school, Neyyoor and C.S.I matriculation school, Seynamvilai only.
- The children with age group between 14-17 years were selected.
- The data collection period was limited to 4 weeks.
- Children available during the time of data collection.

PROJECTED OUTCOME

The study helps to identify the morning blood pressure surge and noon blood pressure among children. The findings of the study help to prevent hypertension, cerebrovascular disease, stroke, atherosclerosis, arterial stiffness, coronary artery disease and aortic and peripheral arterial disease in future.

CONCEPTUAL FRAMEWORK

Pender's Health Promotion Model

The conceptual framework used for this study was Pender's "Health promotion model (1986)". According to Pender's health promotion and disease prevention should be the primary focus in health care, and when health promotion and disease prevention fail to prevent problems, and then care in illness becomes the next priority.

The model focuses on the following three concepts.

- Individual characteristics and experiences
- Behaviour specific knowledge and effect
- Behavioural outcomes

Each person has unique personal characteristics and experiences that affect subsequent actions. These actions are motivated by behaviour specific knowledge. Health promoting behaviour is the desired behavioural outcome. Health promoting behaviour should result in improved health, enhanced functional ability and better quality of life at all stages of development.

Individual characteristics and experiences

In this conceptual framework individual characteristics and experiences are divided under two aspects. Demographic variables such as age, sex, education, and income of the parents and clinical variables such as dietary pattern and family history of hypertension.

Behaviour specific knowledge and effect

Individual characteristics and experiences affect the actions. These actions are motivated by behaviour specific knowledge. In this model behaviour specific knowledge and effect are Unhealthy life style such as smoking, alcoholism, and tobacco use, Interpersonal influence by parents, peer groups and siblings.

Unawareness about the importance of regular check up, Unhealthy dietary practices and lack of exercises.

Behavioural outcomes

Health promoting behaviour is the behavioural outcome. In this model the behavioural outcomes are Practicing healthy life style, Regular exercises, Balanced diet, Nutritional assessment, Periodic medical check up, Regular follow up, Appropriate referral, Informational booklet to the parents and child and Health education about consequence of blood pressure surge in children.

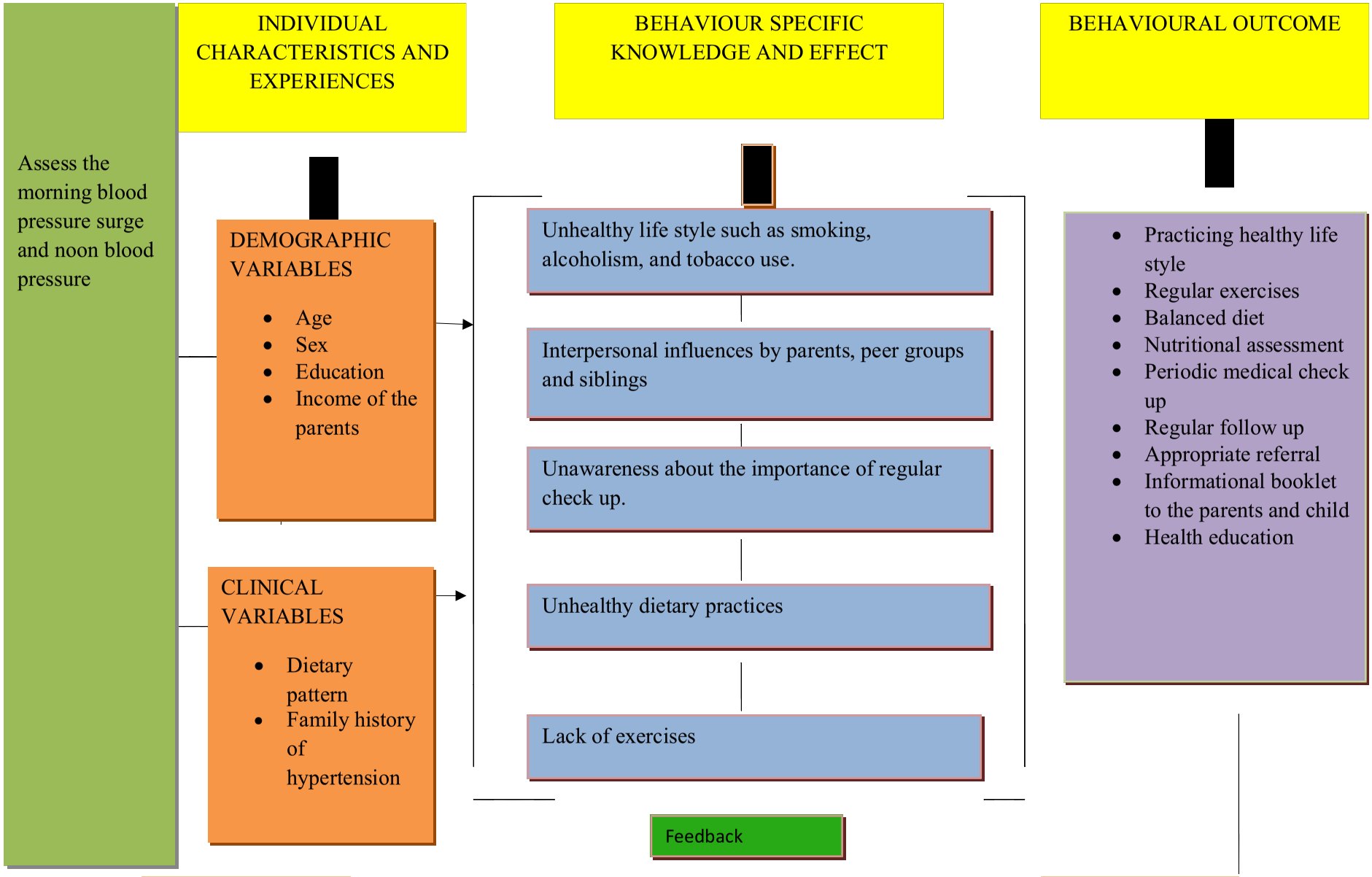

Fig 1: MODIFIED PENDER'S HEALTH PROMOTION MODEL

CHAPTER II

REVIEW OF LITERATURE

The review of literature is a vital component of the research process. It gives the researcher, orientation for the conduction for the study. It provides the source of research ideas for the new researcher.

The review of literature is presented under the following three sections.

Section 1: Studies related to blood pressure

Section 2: Studies related to blood pressure surge

Section 3: studies related to morning blood pressure surge and noon blood pressure

Section 1: Studies related to blood pressure

Peraz and chang., (2014) conducted a randomised cotrolled trail on association of sodium and potassium ratio with blood pressure in Chicago. The role that modified sodium or potassium intake plays in influencing the renin-angiotensin system, arterial stiffness, and endothelial dysfunction remains of interest in current research. Up to the present date, no known systematic review has examined whether the sodium-to-potassium ratio or either sodium or potassium alone is more strongly associated with blood pressure and related factors, including the renin-angiotensin system, arterial stiffness, the augmentation index, and endothelial dysfunction, in humans. The main findings of the study were the sodium-to-potassium ratio appears to be more strongly associated with blood pressure outcomes than either sodium or potassium alone in hypertensive populations.

Gilmer, et al., (2014) conducted a cohort study on Impact of Hypertension on Healthcare Costs among Children in Colorado. This study estimates healthcare costs related to BLOOD PRESSURE and BMI in children and adolescents. 71,617 children aged 3 to 17 years with 208,800 child years of enrolment in integrated health systems. Generalized linear models were used to calculate standardized annual estimates of total, inpatient, outpatient, and pharmacy costs, outpatient utilization, and receipt of diagnostic and evaluation tests associated with BLOOD PRESSURE status and BMI

status. Total annual costs were significantly lower in children with normal BLOOD PRESSURE and prehypertension children with hypertension adjusting for BMI. Total annual cost for children below the 85th percentile of BMI was significantly lower than for children between the 85th and 95th percentiles and for children at or above the 95th percentile adjusting for HT. This study concluded that there is a strong associations of pre hypertension and hypertension, independent of BMI, with healthcare costs in children.

Premalatha.,(2012) conducted a study to assess the prevalence of hypertension and its correlates among school children in selected schools. This study aimed to assess the prevalence of hypertension among school children. Quantitative research approach and cross sectional research design was adopted for this study. There was 200samples of both male and female children between 10 to 12 years selected for data collection. Non probability purposive sampling technique was used to select the sample, based on bio physiological measurements including height, weight, body mass index, blood pressure and heart rate. The result of the study was there were 128 boys(64%) and 72 girls(36%). The mean age of the participants was 10.31 years. This study concluded that 85% who were classified as overweight where a give 2.5% were found to obese.

Ifeoma, et al.,(2010) conducted a community-based study of hypertension and cardio-metabolic syndrome(CMS) in semi-urban and rural communities in Nigeria. This is a cross sectional population based study involving 1458 adolescents. Diagnosis of CMS was based on the new criteria using the anthropometric measurements for Europids as there is none yet for blacks. The results showed overall prevalence of CMS was 18.0% in the semi-urban community as against 10.0% in the rural community increasing to 34.7% and 24.7% respectively in the population with hypertension. This study concluded that high prevalence of CMS in the semi-urban population especially for the population with hypertension underscores the double burden of disease in developing country.

Empar lurbe, et al.,(2009) conducted a longitudinal study on management of high blood pressure in children and adolescents in European society. 70000 children were selected as a sample. This study calculated the age, sex and for seven height percentile categories of blood pressure. Basic guidelines are given. As a result the study recommended guidelines should be successfully implemented in parallel a concerted public action is needed both to improve identification and treatment of high

blood pressure among children and adolescents and to encourage lifestyle factors namely healthy nutrition, low salt intake, non-smoking, and exercise activity.

Matthew, et al., (2004) presented the article on screening for hypertension in children and adolescents to prevent cardiovascular disease in United States. Hypertension in children can be associated with adverse health outcomes and may persist into adulthood, where it present a significant personal and public health burden. Screening asymptomatic children has the potential to detect hypertension at earlier stages so that interventions can be initiated which, if effective, could reduce the adverse health effects of childhood hypertension in children. No studies evaluated the effects of screening asymptomatic children for hypertension on subsequent health outcomes including onset of hypertension. The study concluded that screening helps to reduce the adverse health outcomes or delays the onset of hypertension.

Nirav buch, et al., (2002) conducted a cross sectional study to assess the Prevalence of hypertension in school going children at Surat city, India. The study was conducted in two schools from Surat city (one government and one private). The study subjects were children aged between 6 to 18 years of age. Data was recorded on a pre-designed Performa and managed on Excel spread sheet. Association of each of the categorical with hypertension (outcome variable) is assessed with chi-square test. Data analysis was performed using Epi Info 6 program. Result of the study was *P* value less than 0.05 was considered as statistically significant. The study concluded that there was a significant high prevalence of hypertension among obese children. The prevalence of obesity in hypertensive was 8.7% against normotensive 1.1 %.

Banker chi raga et al., (2002) conducted a study to prevalence of hypertension in school children at Ahmadabad. This study was conducted among 983 school children (490 boys and 393 girls) of 5-15 years age at Ahmadabad municipal corporation schools and semi government school to find out the prevalence of hypertension in children and its correlation with age, gender, and weight of children. In this study mean systolic blood pressure and mean diastolic blood pressure increase with age from 5 to 12 years of age. In this study there was no significance difference in systolic blood pressure and diastolic blood pressure among boys and girls. The result of the study was 3.19% of total prevalence of high pressure among which 3.22% was in boys and 3.16 in girls. Highest prevalence of high blood pressure was observed at 12 years of age with prevalence of 10.71% in boys and 5.26% in girls. Alone isolated systolic high blood pressure was found out the 75.75% isolated

diastolic high diastolic blood pressure was not found in any case where as both high systolic blood pressure and high diastolic blood pressure were found in 24.15% of cases. All children were in prehypertension stage and high blood pressure was directly proportional to increased age, weight, height and body mass index of a children.

Section 2: Studies related to morning blood pressure surge

Sheppard, et al., (2014) conducted a study to assess the prognostic significance of the morning blood pressure surge in clinical practice in United States. This study aimed to systematically review the existing literature and establish the most appropriate definition of pathological morning blood pressure surge. They identified 2,964 unique articles, of which 17 were eligible for the study. Summary meta-analysis gave no clear evidence that prewaking morning blood pressure surge was associated with all cardiovascular events . These findings suggest that when measured and analyzed as a continuous variable, increasing levels of MBLOOD PRESSURES may be associated with increased risk of stroke.

Kazuomi kario, et al.,(2013) conducted a randomised clinical trail to assess the morning blood pressure and cardiovascular risk among adolescents in Jichi medical university. 611 samples were selected for this study. This study investigated the association between the time of onset of events and morning blood pressure surge and demonstrated that the incidence of stroke events in the morning hours was higher in those with exaggerated morning blood pressure surge than in those without exaggerated morning blood pressure surge. This study concluded that accurate monitoring of blood pressure detects the risk of morning blood pressure surge and offering specific treatments for morning blood pressure surge on cardiovascular events needed in the future.

Flynn, et al., (2013) conducted a study to assess the blood pressure variability and morning blood pressure surge in Chinese hypertensive children in china. This retrospective study aimed to investigate blood pressure variability, morning systolic blood pressure surge, and the associated factors in 188 younger hypertensive Chinese patients who had ambulatory blood pressure monitoring. Multiple linear regression analysis showed that body mass index, smoking, and circadian blood pressure variation were factors associated with morning blood pressure surge. The result of the study was systolic blood pressure variability and morning blood pressure surge were

increased in Chinese hypertensive patients, and the morning blood pressure surge was associated with body mass index, and circadian blood pressure variation.

Elsurer et al., (2009) conducted a study to assess the morning blood pressure surge is associated with serum gamma glutamyltransferase(GGT) activity in hypertensive children in Australia . 320 hypertensive children were selected. This study investigates the relationship between morning blood pressure surge and serum gamma glutamyltransferase activity in essential hypertensive children. Morning blood pressure surge was positively correlated with age and body mass index. Daytime augmentation index adjusted for heart rate. In multivariate linear regression analysis morning blood pressure surge was independently associated with age, dipping status and log GGT. the study concluded that morning blood pressure surge is independently associated with serum GGT activity in essential hypertensive children.

Kazuomi kario, et al.,(2004) conducted a study to assess the morning blood pressure surge on alpha adrenergic activity and its association with hypertensive cerebrovascular disease in Jichi medical university. The morning blood pressure is associated with alpha adrenergic activity. We conducted ambulatory blood pressure monitoring three times and after night times dosing of the alpha blocker in 98 patients and assessed the magnetic resonance imaging. The result of the study was prevalence of multiple was higher in the surge group than in the non surge group. The study concluded that morning blood pressure surge particularly that dependent on alpha adrenergic activity is closely associated with advanced silent hypertensive cerebrovascular disease in children.

Section 3: Studies related to morning blood pressure surge and noon blood pressure

John., (2009) conducted a study to revisiting the early morning blood pressure surge and myocardial ischemia in United States. 76 samples were selected. This study demonstrated of onset of myocardial infection and increased risk of MI heavy physical activity. They measured blood pressure in the morning and noon. The results of the study was the timing of release allowed for the higher concentration in the bloodstream between 6.00 AM and 10.00 AM, which has been demonstrated to be the peak hours of acute ischemic events.

Jean-Paul Degaute et al.,(2015) Quantitative Analysis of the 24-Hour Blood Pressure and Heart Rate Patterns in Young Men in Philippia. To characterize the normal nycterohemeral blood pressure and heart rate profiles and to delineate the relative roles of sleep and circadian rhythm, we performed 24-hour ambulatory blood pressure monitoring with simultaneous polygraphic sleep recording in 31 healthy young adolescemts investigated in a standardized physical and social environment Electroencephalographic sleep recordings were performed during 4 consecutive nights. Blood pressure and heart rate were measured every 10 minutes for 24 hours starting in the morning preceding the fourth night of recording. The typical blood pressure and heart rate patterns were bimodal with a morning acrophase (around 10:00 am), a small afternoon nadir (around 3:00 pm), an evening acrophase (around 8:00 pm), and a profound nocturnal nadir (around 3:00 am). Before awakening, a significant increase in blood pressure and heart rate was already present Recumbency and sleep accounted for 65-75% of the nocturnal decline in blood pressure, but it explained only 50% of the nocturnal decline in heart rate. This study was concluded that modulatory factors different from those controlling nycterohemeral changes in blood pressure influence the 24-hour variation in heart rate. The use of ambulatory blood pressure monitoring has improved our understanding of the remarkably wide intraindividual and interindividual variability that characterizes blood pressure in humans.

D S Moller et al.,(2003) conducted a study to assess the accuracy of telemedical home blood pressure measurement in the diagnosis of hypertension. This study was conducted to compare the accuracy of clinic blood pressure (CBLOOD PRESSURE) and telemedical home blood pressure (HBLOOD PRESSURE) measurement in the diagnosis of hypertension in primary care. The study subjects were 411 children with average CBLOOD PRESSURE >140 mmHg systolic or >90 mmHg diastolic, who performed telemedical HBLOOD PRESSURE measurement (5 days, four times daily) and ambulatory blood pressure (ABLOOD PRESSURE) monitoring in random order. The correlation between CBLOOD PRESSURE and ABLOOD PRESSURE was weak, whereas strong correlations existed between HBLOOD PRESSURE and ABLOOD PRESSURE. A progressive improvement in the strength of the linear regression between average HBLOOD PRESSURE of single days and ABLOOD PRESSURE was obtained from day 1 to day 4, with no further benefit obtained on the fifth day. The HBLOOD PRESSURE readings taken at noon and in the afternoon showed significantly stronger correlations

with ABLOOD PRESSURE than the blood pressures measured in the morning and in the evening. This study was concluded that the accuracy of telemedical HBLOOD PRESSURE measurement was substantially better than that of CBLOOD PRESSURE in the diagnosis of hypertension in primary care. HBLOOD PRESSURE most accurately reflected ABLOOD PRESSURE on the fourth day of monitoring, and the readings at noon and in the afternoon seemed to be most accurate.

Dr Kallistratos et al., (2015) conducted a prospective study to assess the effect of midday sleep on blood pressure (BLOOD PRESSURE) levels in hypertensive children at London. The study included 386 middle aged patients (200 men and 186 women, average age 61.4 years) with arterial hypertension. The following measurements were performed in all patients: midday sleep time (in minutes), 24 hour ambulatory BLOOD PRESSURE, pulse wave velocity,2 lifestyle habits, body mass index (BMI) and a complete echocardiography evaluation including left Arteial size.3 BLOOD PRESSURE measurements were reported as diastolic and systolic BLOOD PRESSURE. After adjusting for other factors that could influence BLOOD PRESSURE such as age, gender, BMI, smoking status, salt, alcohol, exercise and coffee, the researchers found that midday sleepers had 5% lower average 24 hour ambulatory systolic BLOOD PRESSURE (6 mmHg) compared to patients who did not sleep at all midday. Their average systolic BLOOD PRESSURE readings were 4% lower when they were awake (5 mmHg) and 6% lower while they slept at night (7 mmHg) than non-midday sleepers. The researchers also found that in midday sleepers pulse wave velocity levels were 11% lower and left atrium diameter was 5% smaller. This study was concluded that midday sleep is associated with lower 24 hour blood pressure, an enhanced fall of BLOOD PRESSURE in night, and less damage to the arteries and the heart. The longer the midday sleeps, the lower the systolic BLOOD PRESSURE levels and probably fewer drugs needed to lower BLOOD PRESSURE.

CHAPTER-III

RESEARCH METHODOLOGY

RESEARCH APPROACH

Quantitative Research Approach was used for this study.

RESEARCH DESIGN:

The study utilizes prospective research design.

SETTING OF THE STUDY:

The settings adopted for this study were Myrna Memorial Higher Secondary School, Bethelpuram, which is located at 18 kilometres away from St. Xavier's catholic college of nursing, 380 students are studying between the age group of 14 to 17 years. L.M.S. higher secondary school, Neyyoor which is located 12 kilometres from St.Xavier's catholic college of nursing, 436 students are studying between the age group of 14 to 17 years and C.S.I. matriculation school Seynamvilai which is located 19 kilometers away from St. Xavier's catholic college of nursing, 134 students are studying between the age group of 14 to 17 years.

POPULATION:

Target Population:

Children those who were having high blood pressure between the age group of14-17 years.

Accessible Population:

Children those who were having high blood pressure in the age of 14 – 17 years studying at L.M.S. higher secondary school, Neyyoor C.S.I. matriculation school, seynamvilai and Myrna Memorial Higher Secondary School, Bethelpuram

SAMPLE

Child with high blood pressure and who were studied in the L.M.S. higher secondary school, Neyyoor, C.S.I. matriculation school, seynamvilai and Myrna Memorial Higher Secondary School, Bethelpuram those who fulfilled the inclusion criteria.

SAMPLE SIZE:

- 30 samples were selected for this study.

SAMPLING TECHNIQUE:

Purposive sampling technique was adopted for this study.

CRITERIA FOR SAMPLE SELECTION:

Inclusion Criteria:

- Children who were having high blood pressure during blood pressure measurement.
- Children who were available during data collection.
- Children between the age group of 14 –17 years.

Exclusion Criteria:

- Children were not interested to participate in this study.
- Children with the diagnosis of nephrotic syndrome, nephritis and heart diseases.

DESCRIPTION OF TOOLS:

Tool consist of three parts

Part-I

It consists of demographic variables such as Age, Sex, Religion, Education, Residential area and income of the parents. (Annexure X)

Part-II

It consists of clinical variables such as Diet pattern and Family history of hypertension. (Annexure X)

Part 111

It designed to assess the morning blood pressure surge and noon blood pressure. Sphygmomanometer was used to measure the blood pressure surge (Annexure X).

CONTENT VALIDITY

Content was validated by three M.Sc nursing faculties with five years of experience and 2 medical experts (Annexure IX). The experts were requested to give their opinion and suggestion for further modifications of items to improve the clarity and content of the items. The final tool was prepared as per the suggestions and advices given by the experts.

PILOT STUDY

Pilot study is a small scale version or trial done in preparation for a major study. Pilot study was conducted by after getting initial permission from Principal of St. Xavier's Catholic College of Nursing.

The pilot study was conducted in oxford matriculation school, Kotikodu after receiving a formal approval from headmaster of the school. Pilot study was conducted in the month of June for a period of one week .The investigator used purposive sampling technique based on inclusion criteria. Blood pressure was checked and those who had increased blood pressure were identified and monitored 4 times a day. If the

child had increased blood pressure only selected. The investigator selected 3 samples and monitored blood pressure in the morning and noon. Findings of the pilot study also revealed that it was feasible and practicable to conduct the study at the selected setting and the criteria measures were found to be effective.

METHOD FOR DATA COLLECTION:

After obtaining formal approval from the principal of St. Xavier's catholic college of nursing and the head masters of Myrna Memorial Higher Secondary School, Bethelpuram (Annexure I)L.M.S. higher secondary school, Neyoor(Annexure II)and C.S.I. matriculation school, Seynamvilai(Annexure III). Screening was done for all students who were studying in the age group between 14-17 years. Blood pressure was assessed by using sphygmomanometer with increased blood pressure were identified and monitored the blood pressure 4 times in a day. If the child persist with high blood pressure only selected based on the inclusion criteria the investigator selected 30 samples for study. Blood pressure was measured for 4 consecutive days in the morning and noon for each sample. Finally the blood pressure was correlated between morning blood pressure surge and noon blood pressure.

PLAN FOR DATA ANALYSIS

Collected data were analysed by using both descriptive and inferential statistics such as frequency, percentage mean, standard deviation, correlation co efficient and chi square.

DESCRIPTIVE STATISTICS

- Frequency and percentage distribution were assessed and analysed according to demographic and clinical variables

INFERENTIAL STATISTICS

- Correlation co efficient was used to find out the relationship between morning blood pressure surge and noon blood pressure.
- Chi square test was used to find out the association between morning blood pressure surge and noon blood pressure with clinical variables.

ETHICAL CONSIDERATIONS

The proposed study was conducted after the approval of dissertation committee of St. Xavier's Catholic College of nursing permission was obtained from headmaster of L.M.S girls higher secondary school, Myrna memorial higher secondary school and C.S.I matriculation school at kanyakumari district. Oral consent was obtained from each sample before starting the data collection. Assurance was given to the study subjects regarding the confidentiality of the data collection

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of the data collected among children to evaluate morning blood pressure surge and noon blood pressure. This chapter also represents the findings of the study. The data collected from the students were tabulated, analysed and preserved in the tables and interpreted under the following sections based on this objectives and hypotheses of the study.

PRESENTATION OF DATA

This chapter is divided into four sections.

Section A

1. Distribution of demographic and clinical variables among children

1.1 Frequency and percentage distribution of demographic variables among children

1.2 Frequency and percentage distribution of clinical variables among children.

Section B

2. Assessment of the morning blood pressure surge and noon blood pressure among children on four consecutive days.

Section C

3. Relationship between the morning blood pressure surge and noon blood pressure among children.

Section D

4. Association of morning blood pressure surge and noon blood pressure with the selected demographic and clinical variables.

4.1 Association of morning blood pressure surge with the selected demographic variables.

4.2 Association of morning blood pressure surge with the clinical variables.

4.3 Association of noon blood pressure with the selected demographic variables.

4.4 Association of noon blood pressure with the clinical variables.

SECTION A

DISTRIBUTION OF DEMOGRAPHIC AND CLINICAL VARIABLES AMONG CHILDREN (ANNEXURE X).

Table 1.1 Frequency and percentage distribution of demographic variables among children

n=30

S. No	Demographic variables	f	%
1	**Age in years** a) 14-15 years b) 16-17 years	 17 13	 56.67 43.33
2	**Sex** a) Male b) female	 14 16	 46.67 53.33

3	**Religion** a) Hindu b) Christian c) Muslim d) others	 12 18 0 0	 40 60 0 0
4	**Education** **a)** 9-10th standard **b)** 11-12th standard	 15 15	 50 50
5	**Residential area** **a)** Semi Urban **b)** rural	 16 14	 53.33 46.67
6	**Monthly income of the parents** a) Rs.Below 10,000 b) Rs.10, 001 - 20,000. **c)** Rs. Above 20,001	 16 10 4	 53.33 33.34 13.37

Table 1.1 represents the distribution of demographic variable according to age 17(56.67%) belongs to the age between 14-15years, 13(43.33%) belongs to the age between 16-17 years.

Regarding sex 14(46.67%) belongs to male and 16(53.33%) belongs to female.

With regard to religion 12(40%) belongs to Hindu and 18(60%) belongs to Christian.

Regarding educational status 15(50%) were 9-10th standard, 15(50%) were 11-12th standard.

With regard to residential area 16(53.33%) belongs to urban area and 14 (46.67%) belongs to rural area.

Regarding monthly income of the parents 16(53.33%) belongs to below Rs. 10,000, 10 (33.34%) belongs to Rs. 10,001-20,000 and 4 (13.37%) belongs to above 20,001.

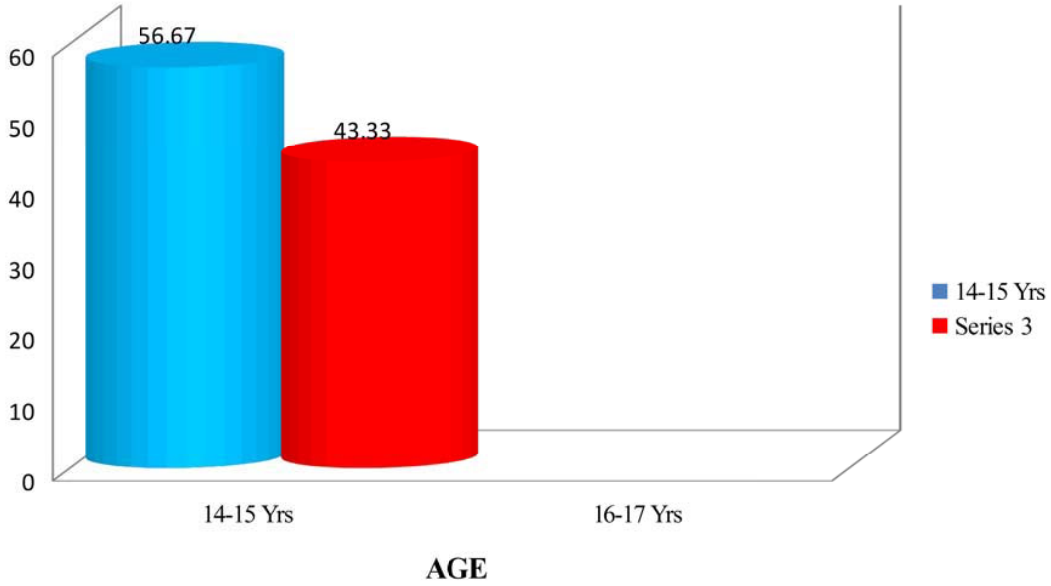

Fig 2.1: Percentage distribution of age among children

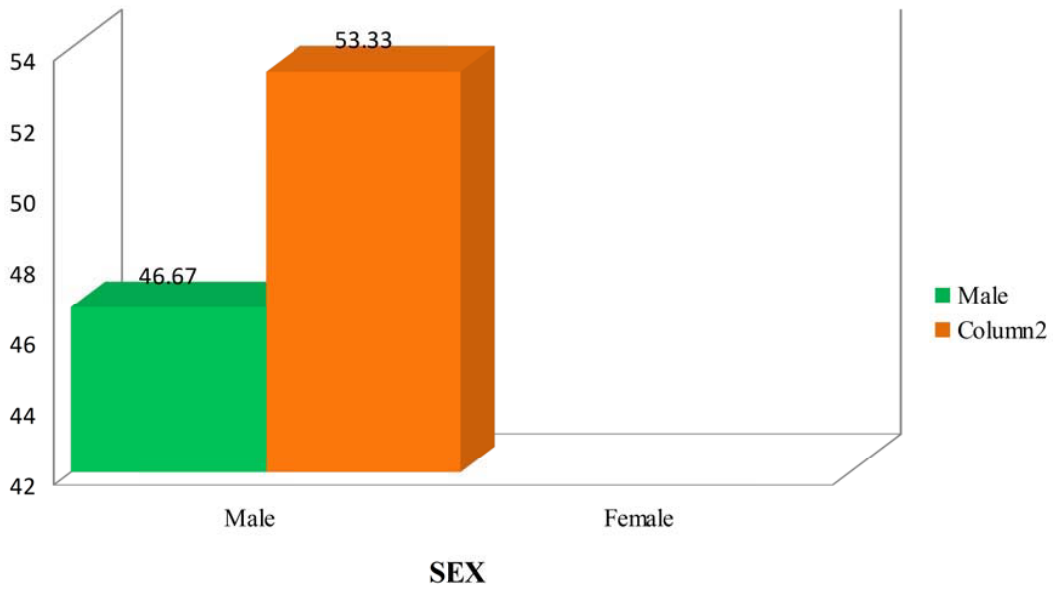

Fig 2.2: Percentage distribution of sex among children.

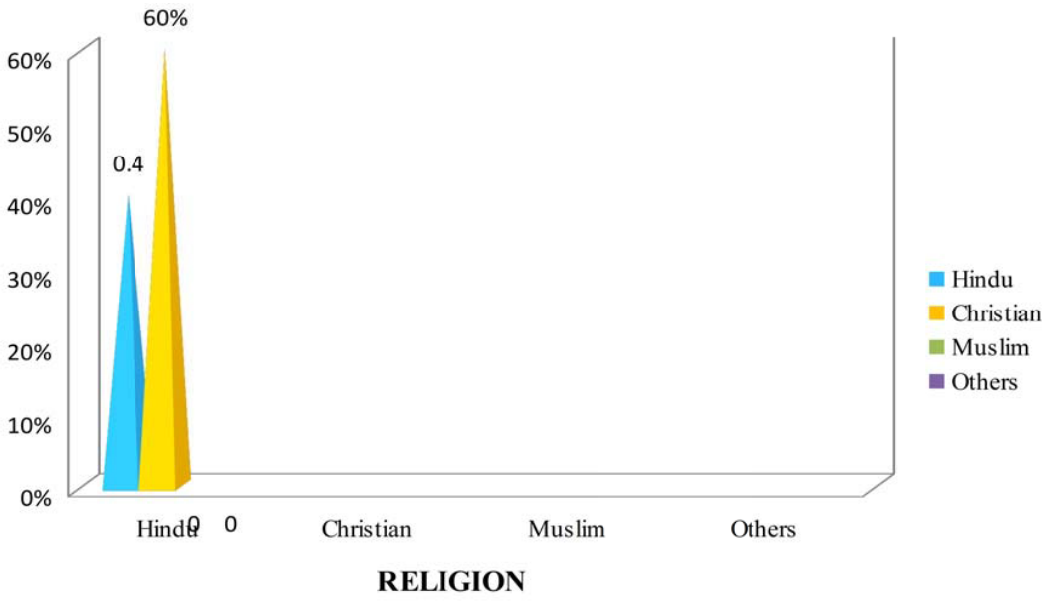

Fig 2.3: Percentage distribution of religion among children

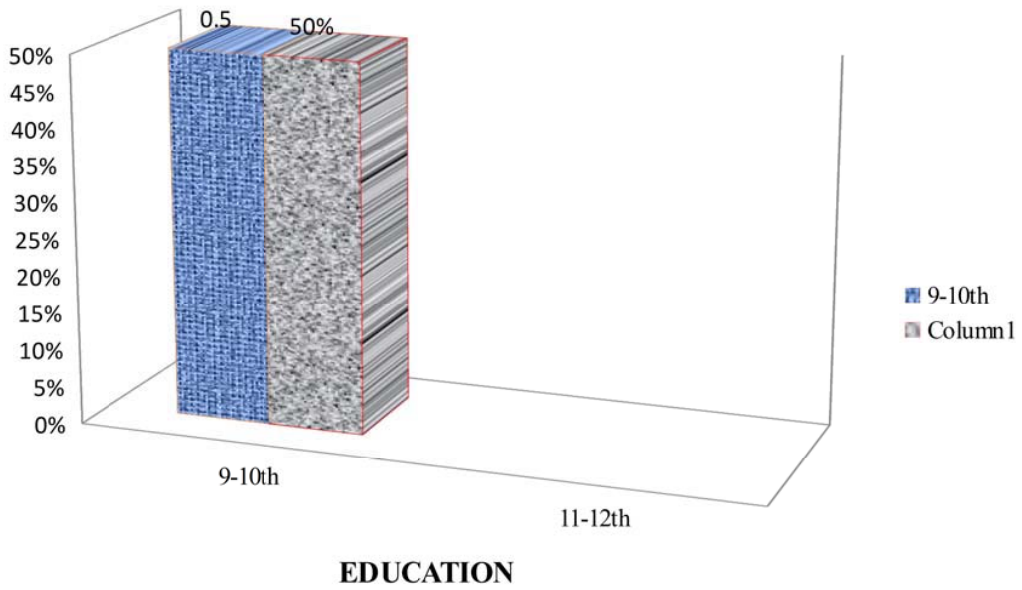

Fig 2.4: Percentage distribution of education among children

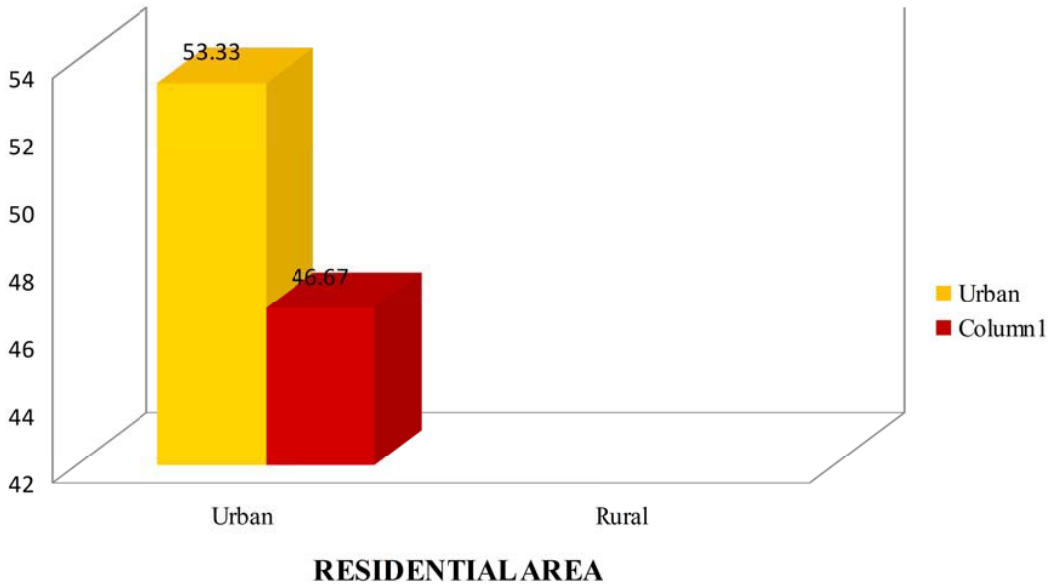

Fig 2.5: Percentage distribution of residential area among children

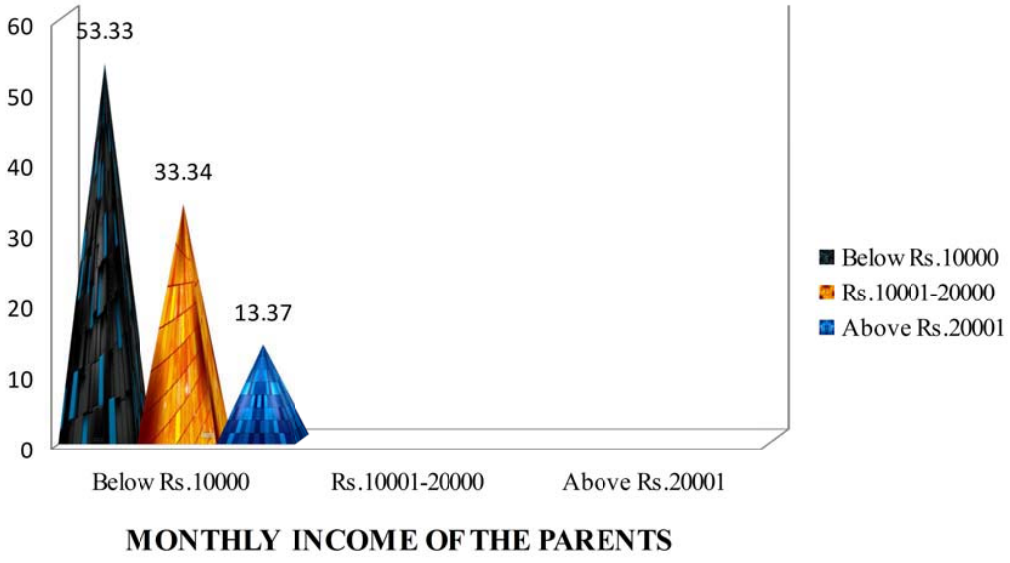

Fig 2.6: Percentage distribution of monthly income of the parents among children

Table 1.2 Frequency and percentage distribution of clinical variables among children.

n=30

S.No	Clinical variables	f	%
1	**Diet pattern of the child** a)Vegetarian diet b)Non vegetarian diet	 0 30	 0 100

2	**Family history of hypertension** a)Yes b)No	11 19	36.67 63.33

Table 1.2 represents regarding diet pattern 30(100%) belongs to non vegetarian diet and none of them belongs to vegetarian diet.

With regard to family history of hypertension 11 (36.67%) had a past history of hypertension and 19(63.33%) had no past history of hypertension.

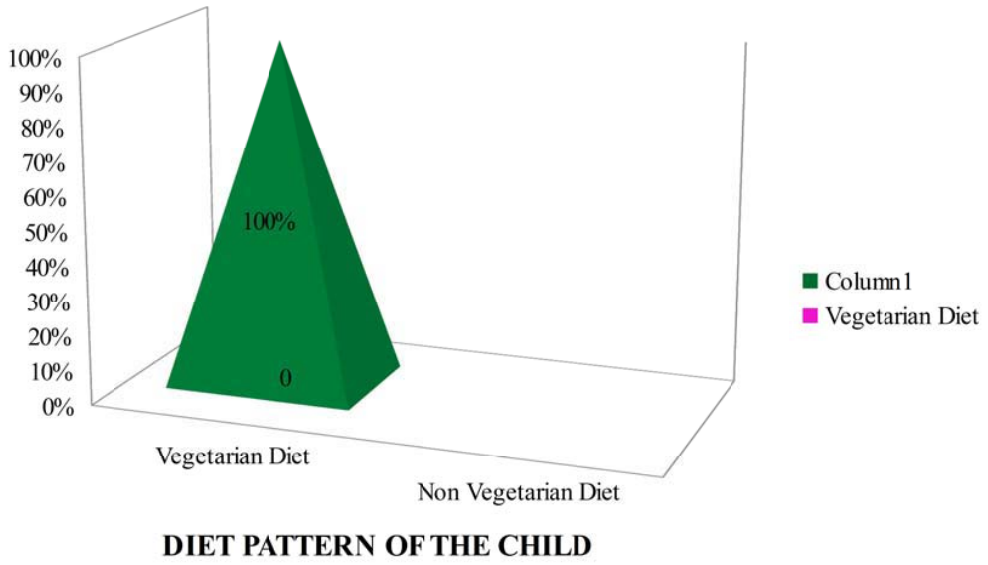

Fig.2.7: Percentage distribution of diet pattern among children.

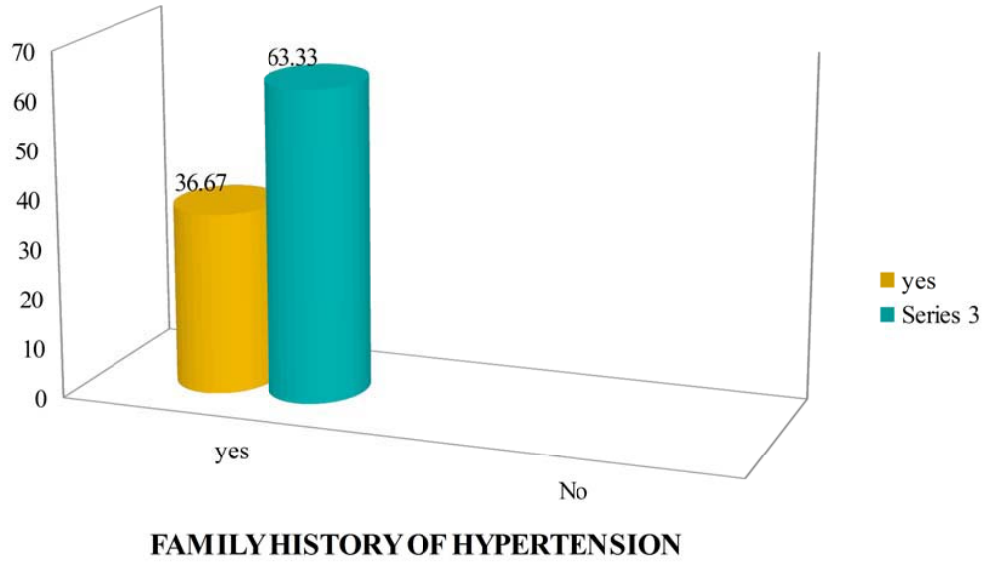

Fig.2.8: Percentage distribution of family history of hypertension among children

SECTION B

2. ASSESSMENT OF MORNING BLOOD PRESSURE SURGE AND NOON BLOOD PRESSURE AMONG CHILDREN ON FOUR CONSECUTIVE DAYS

n=30

Day	Levels of blood pressure												Mean				Standard deviation			
	Morning blood pressure surge						Noon blood pressure						Systolic	Diastolic	Systolic	Diastolic				
	Mild		Moderate		Severe		mild		moderate		Severe									
	f	%	f	%	f	%	f	%	f	%	f	%	Morning	Noon	Morning	Noon	Morning	Noon	Morning	Noon
1	12	40	10	33.33	8	26.67	10	33.33	12	40	8	26.67	133.66	86	138.5	88	7.53	7.61	6.8	6.98
2	13	43.3	11	36.67	6	20	12	40	13	43.33	5	16.67	136.53	88.56	138.9	90.6	7.82	7.02	6.89	7.00
3	18	60	11	36.67	1	3.34	13	43.33	11	36.67	6	20	135.5	86	136.6	89	7.12	7.58	6.98	7.18

4	17	53.34	7	23.33	7	23.33	20	60	10	40	0	0	134	88.5	138.65	89.16	7.63	7.06	6.83	6.82

Table 2 represents On the first day, Morning 12(40%) of children had mild BLOOD PRESSURE, 10(33.33%) of children had moderate BLOOD PRESSURE and 8(26.67%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 133.66 with standard deviation of 7.53 and diastolic blood pressure was 86 with standard deviation of 6.8. In the noon 10(33.33%) of children had mild BLOOD PRESSURE, 12(40%) of children had moderate BLOOD PRESSURE and 8(26.67%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 138.5 with standard deviation of 7.61 and diastolic blood pressure was 88 with standard deviation of 6.98.

On the second day, Morning 13(43.3%) of children had mild BLOOD PRESSURE, 11(36.67%) of children had moderate BLOOD PRESSURE and 6(20%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 136.53 with standard deviation of 7.82 and diastolic blood pressure was 88.56 with standard deviation of 6.89. In the noon 12(40%) of children had mild BLOOD PRESSURE, 13(43.33%) of children had moderate BLOOD PRESSURE and 5(16.67%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 138.9 with standard deviation of 7.02 and diastolic blood pressure was 90.6 with standard deviation of 7.00.

On the third day, Morning 18(60%)of children had mild BLOOD PRESSURE, 11(37%) of children had moderate BLOOD PRESSURE and 1(3%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 135.5 with standard deviation of 7.12 and diastolic blood pressure was 86 with standard deviation of 6.98 In the noon 13(43.3%) of children had mild BLOOD PRESSURE, 11(36.67%) of children had moderate BLOOD PRESSURE and 6(20%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 136.66 with standard deviation of 7.58 and diastolic blood pressure was 89 with standard deviation of 7.18.

On the fourth day, Morning 17(53.34%) of children had mild BLOOD PRESSURE, 7(23%) of children had moderate BLOOD PRESSURE and 7(23%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 134 with standard deviation of 7.63 and diastolic blood pressure was 88.5 with standard

deviation of 6.83 In the noon 20(60%) of children had mild BLOOD PRESSURE, 10(40%)of children had moderate BLOOD PRESSURE. The mean systolic blood pressure was 138.65 with standard deviation of 7.06 and diastolic blood pressure was 89.16 with standard deviation of 6.82.

SECTION C

3. RELATIONSHIP BETWEEN THE MORNING BLOOD PRESSURE SURGE AND NOON BLOOD PRESSURE AMONG CHILDREN

n=30

Day	Blood pressure	Morning		Noon		"r value"
		Mean	Standard deviation	Mean	Standard deviation	
1	Systolic blood pressure	133.66	7.53	138.5	7.61	0.79
	Diastolic blood pressure	86	6.8	88	6.98	0.71
2	Systolic blood pressure	136.53	7.72	138.9	7.02	0.81
	Diastolic blood pressure	88.56	6.89	90.9	7	0.76
3	Systolic blood pressure	135.5	7.12	136.6	7.58	0.73

	Diastolic blood pressure	86	6.98	89	7.18	0.75
4	Systolic blood pressure	134	7.63	138.65	7.06	0.76
	Diastolic blood pressure	88.5	6.83	89.16	6.82	0.70

Table 3 represents on the first day, morning the mean systolic blood pressure was 133.66 with standard deviation of 7.53 and noon mean systolic blood pressure was 138.5 with standard deviation of 7.61. The r value was 0.79. In the morning mean diastolic blood pressure was 86 with standard deviation of 6.8 and noon mean diastolic blood pressure was 88 with standard deviation of 6.98. The r value was 0.71.

On the second day, morning the mean systolic blood pressure was 136.53 with standard deviation of 7.72 and noon mean systolic blood pressure was 138.9 with standard deviation of 7.02. The r value was 0.81. In the morning mean diastolic blood pressure was 88.56 with standard deviation of 6.89 and noon mean diastolic blood pressure was 90.9 with standard deviation of 7. The r value was 0.76.

On the third day, morning the mean systolic blood pressure was 135.5 with standard deviation of 7.12 and noon mean systolic blood pressure was 136.6 with standard deviation 7.58. The r value was 0.73. In the morning mean diastolic blood pressure was 86 with standard deviation of 6.98 and noon mean diastolic blood pressure was 89 with standard deviation of 7.18. The r value was 0.75.

On the fourth day, morning the mean systolic blood pressure was 134 with standard deviation of 7.63 and noon mean systolic blood pressure was 138.65 with standard deviation 7.06. The r value was 0.76. In the morning mean diastolic blood pressure was 88.5 with standard deviation of 6.83 and noon mean diastolic blood pressure was 89.16 with standard deviation of 6.82. The r value was 0.70.

There was a positive correlation found between morning blood pressure surge and noon blood pressure. Hence when the morning blood pressure increases, the noon blood pressure also increases. So the research hypothesis (H_1) is accepted.

SECTION D

4. ASSOCIATION OF MORNING BLOOD PRESSURE SURGE AND NOON BLOOD PRESSURE WITH THE SELECTED DEMOGRAPHIC AND CLINICAL VARIABLES

Table 4.1 Association of morning blood pressure surge with the selected demographic variables

n=30

S. No	Demographic variables	Levels of blood pressure			Chi square test
		mild Blood pressure	moderate Blood pressure	severe Blood pressure	
1	Age in years				χ^2= 0.82
	a)14-15 years	7	5	3	df-2
	b)16-17 years	5	5	5	table value-5.99
2	Sex				χ^2= 2.32
	a) Male	4	5	5	df-2
	b) Female	8	5	3	table value-5.99

3	Religion a)Hindu b) Christian c) Muslim d) Others	 5 7 0 0	 4 6 0 0	 3 5 0 0	 χ^2= 0.52 df-2 table value-5.99
4	Education a)9-10th standard b)11-12th standard	 7 5	 5 5	 3 5	 χ^2= 0.82 df-2 table value-5.99
5	Residential area a)Urban b) Rural	 5 7	 6 4	 5 3	 χ^2= 0.86 df-2 table value-5.99
6	Income of the parents a) Below 10,000 b)10,000 - 20,000) c) Above 20,000	 8 3 1	 5 4 1	 3 3 2	χ^2= 2.48 df-2 table value-5.99

Table 4.1 represents the morning blood pressure surge with selected demographic variables considering the age, chi square value was 0.82and the table

value at degree of freedom two was 5.99. As per the sex chi square value was 2.32 and the table value at degree of freedom two was 5.99. As per religion chi square value was 0.52 and the table value at degree of freedom two was 5.99. As per the education chi square value was 0.82 and the table value at degree of freedom two was 5.99. As per the residential area chi square value was 0.86 and the table value at degree of freedom two was 5.99. As per the monthly income of the parents chi square value was 2.48 and the table value at degree of freedom two was 5.99.

Table 4.2 Association of the morning blood pressure surge with clinical variables

n=30

s.no	**Clinical variables**	**Mild Blood pressure**	**Moderate blood pressure**	**Severe Blood pressure**	**Chi square test**
1	Family history of hypertension				χ^2= 7.41*
	a) Yes	2	3	6	df-2
	b) No	10	7	2	Table value-5.99

P< 0.05 level of significant*

Table 4.2 represents the morning blood pressure surge with clinical variables, as per the family history of hypertension chi square value was 7.41 and the table value at degree of freedom two was 5.99. There was a significant association found between morning blood pressure surge with clinical variables. Hence research hypothesis (H2) is accepted.

Table 4.3 Association of the noon blood pressure with the demographic variables

n=30

S.No	Demographic variables	Levels of blood pressure			Chi square test
		mild Blood pressure	moderate Blood pressure	severe Blood pressure	
1	Age in years a)14-15 years b)16-17 years	 5 5	 7 5	 3 5	 χ^2= 0.82 df-2 Table value-5.99
2	Sex a)Male b) Female	 4 6	 5 7	 5 3	χ^2= 0.90 df-2 Table value-5.99
3	Religion				

	a)Hindu b) Christian c) Muslim d) Others	5 5 0 0	4 8 0 0	3 5 0 0	χ^2= 0.108 df-2 Table value-5.99
4	Education a)9-10th standard b)11-12th standard	5 5	7 5	3 5	χ^2= 0.82 df-2 Table value-5.99
5	Residential area a)Urban b) Rural	4 8	5 5	5 3	χ^2= 0.68 df-2 Table value-5.99
6	Income of the parents a) Below 10,000 b)10,000 - 20,000 c) Above 20,000	6 3 1	7 4 1	3 3 2	χ^2= 1.81 df-2 Table value-5.99

Table 4.3 represents the noon blood pressure with selected demographic variables considering the age, chi square value was 0.82and the table value at degree of freedom two was 5.99. As per the sex chi square value was 0.90 and the table value at degree of freedom two was 5.99. As per religion chi square value was 0.108 and the table value at degree of freedom two was 5.99. As per the education chi square value was 0.82 and the table value at degree of freedom two was 5.99. As per the residential area chi square value was 0.68 and the table value at degree of freedom two was 5.99. As per the monthly income of the parents chi square value was 1.81 and the table value at degree of freedom two was 5.99.

Table 4.4 Association of noon blood pressure with the clinical variables.

n=30

s.no	Clinical variables	Mild	moderate	severe	Chi square value
1	Family history of hypertension				
	a) Yes	1	4	6	χ^2= 8.29*
	b) No	9	8	2	df-2
					Table value-5.99

P< 0.05 level of significant*

Table 4.4 represents the noon blood pressure with clinical variables, as per the family history of hypertension chi square value was 8.29 and the table value at degree of freedom two was 5.99. There was a significant association found between noon blood pressure with clinical variables. Hence research hypothesis (H2) is accepted

CHAPTER V

DISCUSSION

This chapter deals with the discussion of the data analysed based on the objectives and hypothesis of the study. The study was done to assess morning blood pressure surge and noon blood pressure among children in Myrna memorial higher secondary school, Bethelpuram, L.M.S higher secondary school, Neyyoor and C.S.I matriculation school, Seynamvilai .

Distribution of demographic variables and clinical variables of children.

The distribution of demographic variable according to age 17(56.67%) belongs to the age between 14-15years, 13(43.33%) belongs to the age between 16-17 years. Regarding sex 14(46.67%) belongs to male and 16(53.33%) belongs to female. With regard to religion 12(40%) belongs to Hindu and 18(60%) belongs to Christian. Regarding educational status 15(50%) were 9-10th standard, 15(50%) were 11-12th standard. With regard to residential area 16(53.33%) belongs to urban area and 14 (46.67%) belongs to rural area. Regarding monthly income of the parents 16(53.33%) belongs to below Rs. 10,000 and 10 (33.34%) belongs to Rs. 10,001-20,000. Regarding diet pattern 30(100%) belongs to non vegetarian diet. With regard to family history of hypertension 11 (36.67%) had a past history of hypertension and 19(63.33%) belongs to no past history of hypertension.

The first objective was to assess the morning blood pressure surge and noon blood pressure among children.

On the first day, Morning 12(40%) of children had mild BLOOD PRESSURE, 10(33.33%) of children had moderate BLOOD PRESSURE and 8(26.67%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 133.66 with standard deviation of 7.53 and diastolic blood pressure was 86 with

standard deviation of 6.8. In the noon 10(33.33%) of children had mild BLOOD PRESSURE, 12(40%) of children had moderate BLOOD PRESSURE and 8(26.67%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 138.5 with standard deviation of 7.61 and diastolic blood pressure was 88 with standard deviation of 6.98.

On the second day, Morning 13(43.3%) of children had mild BLOOD PRESSURE, 11(36.67%) of children had moderate BLOOD PRESSURE and 6(20%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 136.53 with standard deviation of 7.82 and diastolic blood pressure was 88.56 with standard deviation of 6.89. In the noon 12(40%) of children had mild BLOOD PRESSURE, 13(43.33%) of children had moderate BLOOD PRESSURE and 5(16.67%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 138.9 with standard deviation of 7.02 and diastolic blood pressure was 90.6 with standard deviation of 7.00.

On the third day, Morning 18(60%)of children had mild BLOOD PRESSURE, 11(37%) of children had moderate BLOOD PRESSURE and 1(3%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 135.5 with standard deviation of 7.12 and diastolic blood pressure was 86 with standard deviation of 6.98 In the noon 13(43.3%) of children had mild BLOOD PRESSURE, 11(36.67%) of children had moderate BLOOD PRESSURE and 6(20%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 136.66 with standard deviation of 7.58 and diastolic blood pressure was 89 with standard deviation of 7.18.

On the fourth day, Morning 17(53.34%) of children had mild BLOOD PRESSURE, 7(23%) of children had moderate BLOOD PRESSURE and 7(23%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 134 with standard deviation of 7.63 and diastolic blood pressure was 88.5 with standard deviation of 6.83 In the noon 20(60%) of children had mild BLOOD PRESSURE, 10(40%)of children had moderate BLOOD PRESSURE. The mean systolic blood pressure was 138.65 with standard deviation of 7.06 and diastolic blood pressure was 89.16 with standard deviation of 6.82.

The first objective was supported by a study which was conducted by **Kazuomi kario, (2013)** a randomised clinical trail to assess the morning blood pressure and cardiovascular risk among adolescents in Jichi medical university. 611 samples were selected for this study. This study investigated the association between the time of onset of events and morning blood pressure surge and demonstrated that the incidence of stroke events in the morning hours was higher in those with exaggerated morning blood pressure surge than in those without exaggerated morning blood pressure surge. This study concluded that accurate monitoring of blood pressure detects the risk of morning blood pressure surge and offering specific treatments for morning blood pressure surge on cardiovascular events needed in the future.

The second objective was to find out the relationship between the morning blood pressure surge and noon blood pressure.

On the first day, morning the mean systolic blood pressure was 133.66 with standard deviation of 7.53 and noon mean systolic blood pressure was 138.5 with standard deviation of 7.61. The “r value” was 0.79. In the morning mean diastolic blood pressure was 86 with standard deviation of 6.8 and noon mean diastolic blood pressure was 88 with standard deviation of 6.98. The “r value” was 0.71.

On the second day, morning the mean systolic blood pressure was 136.53 with standard deviation of 7.72 and noon mean systolic blood pressure was 138.9 with standard deviation of 7.02. The “r value” was 0.81. In the morning mean diastolic blood pressure was 88.56 with standard deviation of 6.89 and noon mean diastolic blood pressure was 90.9 with standard deviation of 7. The “r value” was 0.76.

On the third day, morning the mean systolic blood pressure was 135.5 with standard deviation of 7.12 and noon mean systolic blood pressure was 136.6 with standard deviation 7.58. The “r value” was 0.73. In the morning mean diastolic blood pressure was 86 with standard deviation of 6.98 and noon mean diastolic blood pressure was 89 with standard deviation of 7.18. The “r value” was 0.75.

On the fourth day, morning the mean systolic blood pressure was 134 with standard deviation of 7.63 and noon mean systolic blood pressure was 138.65 with standard deviation 7.06. The “r value” was 0.76. In the morning mean diastolic blood

pressure was 88.5 with standard deviation of 6.83 and noon mean diastolic blood pressure was 89.16 with standard deviation of 6.82. The “r value” was 0.70.

There was a positive correlation found between morning blood pressure surge and noon blood pressure. Hence when the morning blood pressure increases, the noon blood pressure also increases. Hence research hypothesis (H1) is accepted.

There was a significant relation between morning blood pressure surge and noon blood pressure. The study represents morning blood pressure surge increases the noon blood pressure also increase with the “r value” greater than 0.7. This study statistically proved the morning blood pressure surge and noon blood pressure cause hypertension in future.

The second objective was supported by a study which was conducted by **Kaplan (2000)** a study among 1,505 children aged 5–14 years demonstrated tracking of systolic and diastolic BLOOD PRESSUREs over 15 years, with statistically significant correlation coefficients between childhood BLOOD PRESSURE and later BLOOD PRESSURE levels. 116 young participants who had developed hypertension, 48% and 41% had suffered elevated childhood systolic and diastolic BLOOD PRESSUREs, respectively.

The third objective was to associate morning blood pressure surge and noon blood pressure with the selected demographic and clinical variables

The demographic variables such as age, sex, education, residential area and income of the parents and clinical variables such as diet pattern and family history of hypertension. In morning blood pressure surge and noon blood pressure of family history of hypertension of clinical variable, the calculated value 8.29 which is significant at $p>0.05$. Hence research hypothesis (H_2) is accepted.

This chapter dealt with the discussion of the study with reference to the objective and supportive studies. The three objectives and two hypotheses were accepted for this study.

CHAPTER VI

SUMMARY, CONCLUSION, LIMITATION, NURSING IMPLICATIONS, RECOMMENDATIONS

This chapter dealt with the summary of the study, conclusion, nursing implications and recommendations of the study.

SUMMARY

This study was undertaken to assess the morning blood pressure surge and noon blood pressure. Quantitative research approach with prospective research design was adopted. This study was conducted in L.M.S. higher secondary school, Neyyoor C.S.I. matriculation school, seynamvilai and Myrna Memorial Higher Secondary School, Bethelpuram. 30 Samples were selected by using purposive sampling techniques. The data was collected and analysed by using descriptive and inferential statistics. The r value is greater than 0.7. Hence the morning blood pressure and noon blood pressure were positively correlated.

The major findings of the study was summarised as follows.

The distribution of demographic variable according to age 17(56.67%) belongs to the age between 14-15years, 13(43.33%) belongs to the age between 16-17

years. Regarding sex 14(46.67%) belongs to male and 16(53.33%) belongs to female. With regard to religion 12(40%) belongs to Hindu and 18(60%) belongs to Christian. Regarding educational status 15(50%) were 9-10th standard, 15(50%) were 11-12th standard. With regard to residential area 16(53.33%) belongs to urban area and 14 (46.67%) belongs to rural area. Regarding monthly income of the parents 16(53.33%) belongs to below Rs. 10,000 and 10 (33.34%) belongs to Rs. 10,001-20,000. Regarding diet pattern 30(100%) belongs to non vegetarian diet and none of them had vegetarian diet. With regard to family history of hypertension 11 (36.67%) had a past history of hypertension and 19(63.33%) belongs to no past history of hypertension.

On the first day, Morning 12(40%) of children had mild BLOOD PRESSURE, 10(33.33%) of children had moderate BLOOD PRESSURE and 8(26.67%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 133.66 with standard deviation of 7.53 and diastolic blood pressure was 86 with standard deviation of 6.8. In the noon 10(33.33%) of children had mild BLOOD PRESSURE, 12(40%) of children had moderate BLOOD PRESSURE and 8(26.67%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 138.5 with standard deviation of 7.61 and diastolic blood pressure was 88 with standard deviation of 6.98.

On the second day, Morning 13(43.3%) of children had mild BLOOD PRESSURE, 11(36.67%) of children had moderate BLOOD PRESSURE and 6(20%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 136.53 with standard deviation of 7.82 and diastolic blood pressure was 88.56 with standard deviation of 6.89. In the noon 12(40%) of children had mild BLOOD PRESSURE, 13(43.33%) of children had moderate BLOOD PRESSURE and 5(16.67%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 138.9 with standard deviation of 7.02 and diastolic blood pressure was 90.6 with standard deviation of 7.00.

On the third day, Morning 18(60%) of children had mild BLOOD PRESSURE, 11(37%) of children had moderate BLOOD PRESSURE and 1(3%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 135.5 with standard deviation of 7.12 and diastolic blood pressure was 86 with

standard deviation of 6.98 In the noon 13(43.3%) of children had mild BLOOD PRESSURE, 11(36.67%) of children had moderate BLOOD PRESSURE and 6(20%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 136.66 with standard deviation of 7.58 and diastolic blood pressure was 89 with standard deviation of 7.18.

On the fourth day, Morning 17(53.34%) of children had mild BLOOD PRESSURE, 7(23%) of children had moderate BLOOD PRESSURE and 7(23%) of children had severe BLOOD PRESSURE. The mean systolic blood pressure was 134 with standard deviation of 7.63 and diastolic blood pressure was 88.5 with standard deviation of 6.83 In the noon 20(60%) of children had mild BLOOD PRESSURE, 10(40%)of children had moderate BLOOD PRESSURE. The mean systolic blood pressure was 138.65 with standard deviation of 7.06 and diastolic blood pressure was 89.16 with standard deviation of 6.82.

There was a positive correlation found between morning blood pressure surge and noon blood pressure. Hence when the morning blood pressure increases, the noon blood pressure also increases. So the research hypothesis (H1) is accepted.

There was an association between the morning blood pressure surge and noon blood pressure with their clinical variables such as family history of hypertension.

CONCLUSION

The aim of the study was to assess the morning blood pressure surge and noon blood pressure among children. Quantitative research approach with prospective research design was adopted. Samples were selected from L.M.S. higher secondary school, Neyyoor, C.S.I. matriculation school, seynamvilai and Myrna Memorial Higher Secondary School, Bethelpuram. By using purposive sampling technique 30 samples were selected for this study. Screening was done for all the students who were studying in the age group between 14-17 years.. High blood pressure children were selected and monitored morning blood pressure surge and noon blood pressure for four consecutive days. The data were gathered and analysed by descriptive and inferential statistics. In this descriptive statistics frequency and percentage were

assessed and analysed according to demographic and clinical variables. Correlation and co efficient was used to find out the relationship between morning blood pressure surge and noon blood pressure. Chi square test was used to find out the association between morning blood pressure surge and noon blood pressure with demographic and clinical variables and interpretation was made on the basis of the objectives of the study.

The distribution of demographic variable according to age 17(56.67%) belongs to the age between 14-15years, 13(43.33%) belongs to the age between 16-17 years. Regarding sex 14(46.67%) belongs to male and 16(53.33%) belongs to female. With regard to religion 12(40%) belongs to Hindu and 18(60%) belongs to Christian. Regarding educational status 15(50%) were 9-10th standard, 15(50%) were 11-12th standard. With regard to residential area 16(53.33%) belongs to urban area and 14 (46.67%) belongs to rural area. Regarding monthly income of the parents 16(53.33%) belongs to below Rs. 10,000 and 10 (33.34%) belongs to Rs. 10,001-20,000. Regarding diet pattern 30(100%) belongs to non vegetarian diet. With regard to family history of hypertension 11 (36.67%) had a past history of hypertension and 19(63.33%) belongs to no past history of hypertension.

There was a positive correlation found between morning blood pressure surge and noon blood pressure. Hence when the morning blood pressure increases, the noon blood pressure also increases. So the research hypothesis (H_1) is accepted.

The demographic variables such as age, sex, education, residential area and income of the parents and clinical variables such as diet pattern and family history of hypertension. In morning blood pressure surge and noon blood pressure of family history of hypertension of clinical variable, the calculated value 8.29 which is significant at $p>0.05$. Hence research hypothesis (H_2) is accepted.

NURSING IMPLICATIONS

The researcher has derived the following implications from the study results, which are of vital concern to the field of nursing service, nursing education, nursing administration, and nursing research.

Nursing service

- Nursing personnel should develop in depth knowledge about the health problems of paediatric population.
- Nurses should be knowledgeable regarding morning blood pressure surge and noon blood pressure.
- Nurse should promote and prevent many diseases in adulthood. Encourage the parents and children to go for regular follow up.

Nursing education

- The nurse educators should be equipped with knowledge regarding the morning blood pressure surge and noon blood pressure.
- Nursing students should receive adequate knowledge regarding morning blood pressure surge and noon blood pressure.
- Conduct workshops or conferences for students. Strengthen the curriculum for nurses to excel them in knowledge and skill in areas of various measures.

Nursing administration

- Nurse administrator should assist in implementing public health awareness campaigns aimed at reducing hypertension in future.
- Nurses should provide knowledge, resources and leadership for establishing public health policies that focus on early detection of hypertension. Public information programs may be designed by morning BLOOD PRESSURE children.

Nursing research

- Nurse should conduct research for further clarifications of morning blood pressure surge and noon blood pressure.
- Encourage conducting further research on the effects of morning blood pressure surge.
- Disseminate the findings of research through conferences, seminars and publishing in nursing journals.

LIMITATIONS

- Since there were few studies done on the noon blood pressure among children, the investigator had lot of difficulties in collecting the study materials for the review.

RECOMMENDATIONS

- The study can be conducted with more sample size to generalize the finding.
- The study can be conducted among children between the age of 14-17 years.
- The study can be conducted in long time period.

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20. http://www.healthboardscom.

ANNEXURES-I

St. XAVIER'S CATHOLIC COLLEGE OF NURSING

Chunkankadai, Nagercoil,
Kanyakumari District,
Tamil Nadu - 629 003.

Tel : College : 04651 - 231740
Cell : 9840307884
Fax : 04651 - 230914
E-mail : xaviers_nursing@yahoo.com
reenaevancy@yahoo.com
Website : www.xaviersnsg.edu.in

Dr. A. REENA EVENCY, M.Sc. (N)., Ph.D.,
Principal

29.06.2015

To

The Headmaster,

Myrna Memorial Higher secondary School,

Bethelpuram,

Bethelpuram (p.o),

K.K Dist.

Respected Sir,

Mrs. S. Shiny is a student of M.Sc. ,Nursing programme in our college from Child Health Nursing department. She is conducting a study on 'A correlational study to assess the relationship between morning blood pressure surge and hypertension among children in selected schools at Kanya Kumari district'.

This is for the research project to be submitted to the Tamil Nadu Dr.M.G.R Medical University requirement for the award of M.Sc., Nursing degree and will be beneficial in understanding and improving the quality of life of school students with asthma.

As part of her study she needs to assess the relationship between morning blood pressure surge and hypertension. So permission may kindly be granted for her to conduct the study in your esteemed school. She will abide by the rules and regulations of your school.

Thanking You.

Yours faithfully,

PRINCIPAL
ST. XAVIER'S CATHOLIC COLLEGE OF NURSING
CHUNKANKADAI
NAGERCOIL - 629 003
K. K. DIST.

ANNEXURES-II

St. XAVIER'S CATHOLIC COLLEGE OF NURSING

Chunkankadai, Nagercoil,
Kanyakumari District,
Tamil Nadu - 629 003.

Tel : College : 04651 - 231740
Cell : 9840307884
Fax : 04651 - 230914
E-mail : xaviers_nursing@yahoo.com
reenaevancy@yahoo.com
Website : www.xaviersnsg.edu.in

Dr. A. REENA EVENCY, M.Sc. (N)., Ph.D.,
Principal

29.06.2015

To

The Headmaster,

L.M.S. Girls Higher secondary School,

Neyyoor ,

Neyyoor (p.o),

K.K Dist.

Respected Sir,

Mrs. S. Shiny is a student of M.Sc. ,Nursing programme in our college from Child Health Nursing department. She is conducting a study on 'A correlational study to assess the relationship between morning blood pressure surge and hypertension among children in selected schools at Kanya Kumari district'.

This is for the research project to be submitted to the Tamil Nadu Dr.M.G.R Medical University requirement for the award of M.Sc., Nursing degree and will be beneficial in understanding and improving the quality of life of school students with asthma.

As part of her study she needs to assess the relationship between morning blood pressure surge and hypertension. So permission may kindly be granted for her to conduct the study in your esteemed school. She will abide by the rules and regulations of your school.

Thanking You.

Yours faithfully,

PRINCIPAL
ST. XAVIER'S CATHOLIC COLLEGE OF NURSING
CHUNKANKADAI
NAGERCOIL - 629 003
K. K. DIST.

ANNEXURES-III

St. XAVIER'S CATHOLIC COLLEGE OF NURSING

Chunkankadai, Nagercoil,
Kanyakumari District,
Tamil Nadu - 629 003.

Tel : College : 04651 - 231740
Cell : 9840307884
Fax : 04651 - 230914
E-mail : xaviers_nursing@yahoo.com
reenaevancy@yahoo.com
Website : www.xaviersnsg.edu.in

Dr. A. REENA EVENCY, M.Sc. (N)., Ph.D.,
Principal

29.06.2015

To

The Headmaster,

C.S.I. Matriculation School,

Seynamvilai,

Bethelpuram (p.o),

K.K Dist.

Respected Sir,

Mrs. S. Shiny is a student of M.Sc. ,Nursing programme in our college from Child Health Nursing department. She is conducting a study on 'A correlational study to assess the relationship between morning blood pressure surge and hypertension among children in selected schools at Kanya Kumari district'.

This is for the research project to be submitted to the Tamil Nadu Dr.M.G.R Medical University requirement for the award of M.Sc., Nursing degree and will be beneficial in understanding and improving the quality of life of school students with asthma.

As part of her study she needs to assess the relationship between morning blood pressure surge and hypertension. So permission may kindly be granted for her to conduct the study in your esteemed school. She will abide by the rules and regulations of your school.

Thanking You.

Yours faithfully,

PRINCIPAL
ST. XAVIER'S CATHOLIC COLLEGE OF NURSING
CHUNKANKADAI
NAGERCOIL - 629 003
K. K. DIST.

ANNEXURES-IV

M.M. HIGHER SECONDARY SCHOOL

BETHELPURAM - 629 803

Date : .....

To

The principal,

St. Xavier's catholic college of nursing,

Chunkankadai,

Nagercoil.

Respected Sir,

This is to certify that Mrs.S.Shiny, M.Sc nursing II year student of St.Xavier's Catholic College of Nursing, Chunkankadai has conducted a study on " A correlational study to assess the relationship between morning blood pressure surge and hypertension among children"in Myrna Memorial Higher Secondary School, Bethelpuram for 15 days from 01.07.2015 to 15.07.2015. She has successfully completed the data collection.

HEADMASTER
M.M.Hr.Sec.SCHOOL
BETHELPURAM - 629803

ANNEXURES-V

Phone : 04651- 222250

L.M.S. HIGHER SECONDARY SCHOOL FOR GIRLS

NEYYOOR - 629 802

KANYAKUMARI DISTRICT, TAMIL NADU, SOUTH INDIA.

From	To
Tmt. **D. VANAJA NALINA KUMARI,** M.Sc., M.Ed.,M.Phil. HEADMISTRESS **L.M.S.H.S.School for Girls** **Neyyoor P.O.**	

Letter No. ..... *Date* 31.7.15

To

The principal,

St. Xavier's catholic college of nursing,

Chunkankadai,

Nagercoil.

Respected madam,

This is to certify that Mrs.S.Shiny, M.Sc nursing II year student of St.Xavier's Catholic College of Nursing, Chunkankadai has conducted a study on " A correlational study to assess the relationship between morning blood pressure surge and hypertension among children"in L.M.S. Girls Higher Secondary School, Neyyoor for 15 days from 16.07.2015 to 31.07.2015. She has successfully completed the data collection.

31.7.15

HEADMISTRESS
L.M.S. HIGHER SECONDARY SCHOOL FOR GIRLS
NEYYOOR - 629 802

ANNEXURES-VI

C.S.I. MATRICULATION SCHOOL SEYNAMVILAI
(KANYAKUMARI DIOCESE)

Seynamvilai, Bethelpuram P.O.

K.K. Dist – 629 803

Govt Approval No. 10769/6/2005

To

The Principal,

St. Xavier's catholic college of nursing,

Chunkankadai,

Nagercoil.

Respected Sir,

This is to certify that Mrs. S.Shiny, M.Sc. nursing II year student of St. Xavier's catholic college of nursing, Chunkankadai has conducted a study on "A correlational study to assess the relationship between morning blood pressure surge and hypertension among children in C.S.I.Matriculation School, Seynamvilai for 15 days from 01.07.2015 to 15.07.2015. She has successfully completed the data collection.

C.S.I. MATRICULATION HIGH SCHOOL SEYNAMVILAI
SEYNAMVILAI, BETHELPURAM - P.O., K.K. DT., PIN - 629 803
KANYAKUMARI DIOCESE

31/7/2015

PRINCIPAL
C.S.I. MATRICULATION SCHOOL SEYNAMVILAI
Bethelpuram (P.O)
Kanyakumari (Dt) Pin: 629 803

ANNEXURES-VII

LETTER SEEKING EXPERTS OPINION FOR THE VALIDITY OF THE TOOL

From:

Mrs.S.Shiny,

M.Sc (N) II year,

St. Xavier's Catholic College of Nursing,

Chunkankadai.

To:

Respected Sir/Madam,

Sub: Requisition to expert opinion and suggestion for the content validity.

I am Shiny,M.Sc Nursing II Year student of St.Xavier's Catholic College Of Nursing, Chunkankadai, have selected the following topic **"A study to assess the morning blood pressure surge and noon blood pressure among children in selected schools at Kanyakumari district"** for my dissertation to be submitted to TamilnaduDr.M.G.R. Medical University in the partial fulfilment of the requirement for award of Master of Science in Nursing.

I request you to go through the items and give your valuable suggestions and opinions to develop the content validity of the tool.Kindly suggest modifications,addition and deletions, if any in the remarks column.

Thanking You,

Place:Chunkankadai Yours sincerely,

Date: **S.Shiny.**

ENCLOSURE:

1. Problem statements, objectives and hypothesis of the study.
2. Demographic variables.
3. Levels of blood pressure to assess the morning blood pressure surge and noon blood pressure.
4. Evaluation performa.

ANNEXURES-VIII

EVALUATION CRITERIA CHECKLIST FOR VALIDATION

Instructions:

The expert is requested to go through the following criteria for evaluation.Three columns are given for responses and a column for remarks. Please tick mark

(✓) in the appropriate columns and give remarks.Interpretation column:

Column I – meets the criteria.

Column II –Partially meets the criteria.

Column III - Does not meet the criteria.

S.No	**CRITERIA**	1	2	3	Remarks
1	Scoring -adequacy. -clarity. -simplicity.				
2	Content -logical sequence. -adequacy. -relevance.				
3	Language -appropriate. -clarity. -simplicity.				
4	Practicability -easy to score. -precise. -utility.				

Any Other Suggestion:

Signature:

Name:

Designation:

Address:

CRITERIA CHECK LIST FOR VALIDATION OF THE TOOL

Instruction:

Kindly give your suggestions regarding the accuracy, relevance and appropriateness of the content. Please tick mark in the ✓ specific column.

PART I

Validation of Demographic Variables

Item	Very relevant	Relevant	Need for modification	Not relevant	Remarks
1					
2					
3					
4					
5					
6					
7					
8					

ANNEXURE IX

LIST OF EXPERTS WHO VALIDATED THE TOOL

1. Dr .Sashaya Jeyaharan, M.B.B.S, MD,
   Jeyaharan hospital
   Nagercoil

2. Dr.Suthaponnu, M.B.B.S, MD
   Medical Director
   Agasthiyarmuni child care centre
   Valla madam, Nagercoil.

3. Mrs.MalghijaM.Sc(N)
   Professor
   Christian college of nursing
   Neyyoor

3. Mrs.PremalathaM.Sc(N)
   Associate professor
   Christian college of nursing
   Neyyoor

4. Mrs.SaraipriyaPh.D
   Principal
   P.s college of nursing
   Thalakulam.

ANNEXURE X

DEMOGRAPHIC VARIABLES

Part I (Interview schedule)

Instructions:

The investigator will ask the item listed below and place the tick mark ( ) against the response given by the respondents.

1. Age in years
   a)12-13 years ( )

b) 14-15 years ( )

c) 16-17 years ( )

2. Sex

a) Male ( )

b) Female ( )

3. Religion

a) Hindu ( )

b) Christian ( )

c) Muslim ( )

d) Others ( )

4. Education

a) 9-10th standard ( )

b) 11-12th standard ( )

5. Residential area

a) Urban ( )

b) Rural ( )

6. Income of the parents

a) BelowRs.10, 000 ( )

b) Rs.10, 001 - 20,000 ( )

c) Above Rs.20, 001 ( )

CLINICAL VARIABLES

1. Diet pattern of the child

a) Vegetarian diet ( )

b) Non vegetarian diet ( )

2. Do you have any family history of hypertension?

a) Yes ( )

b) No ( )

PART II

LEVELS OF BLOOD PRESSURE

LEVELS OF BLOOD PRESSURE	**BLOOD PRESSURE MEASUREMENTS**
Mild	130/80 mm of Hg

Moderate	140/ 90 mm of Hg
Severe	150/ 90 mm of Hg

ANNEXURE XI

CALIBRATION CERTIFICATE

CALIBRATION CERTIFICATE

Date: 28.5.2015

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Mrs. Shiny.S** is a M.Sc Nursing student of St. Xavier's Catholic College of Nursing, Chunkankadai will be conduct a study on "**A study to assess the morning blood pressure surge and noon blood pressure among children in selected schools at Kanyakumari district**", in which she is using sphygmomanometer, the deviation within the range and the instrument is working in good condition.

Date of calibration: 30.05.2015

Next due for calibration: 30.03.2016

Bio- medical Engineer

ANNEXURE XII

CERTIFICATE OF STATISTICAL ANALYSIS

CERTIFICATE OF STATISTICAL ANALYSIS

TO WHOM SO EVER IT MAY CONCERN

Certified the dissertation paper titled **"A study to assess the morning blood pressure surge and noon bood pressure among children in selected schools at kanyakumari district"** done by Mrs.Shiny.S has been Checked for the accuracy in statistical analysis and interpretation and was appropriate for the purpose.

5/2/16

Signature

Dr. G. IMMANUEL, Ph.D.
Assistant Professor
Centre for Marine Sciences & Technology
Manonmaniam Sundaranar University
Rajakkamangalam-629 502
K.K. District, South India

ANNEXURE XIII

FORMULAS USED FOR DATA ANALYSIS

DESCRIPTIVE STATISTICS

Mean $$\dot{x} = \frac{\sum x}{N}$$

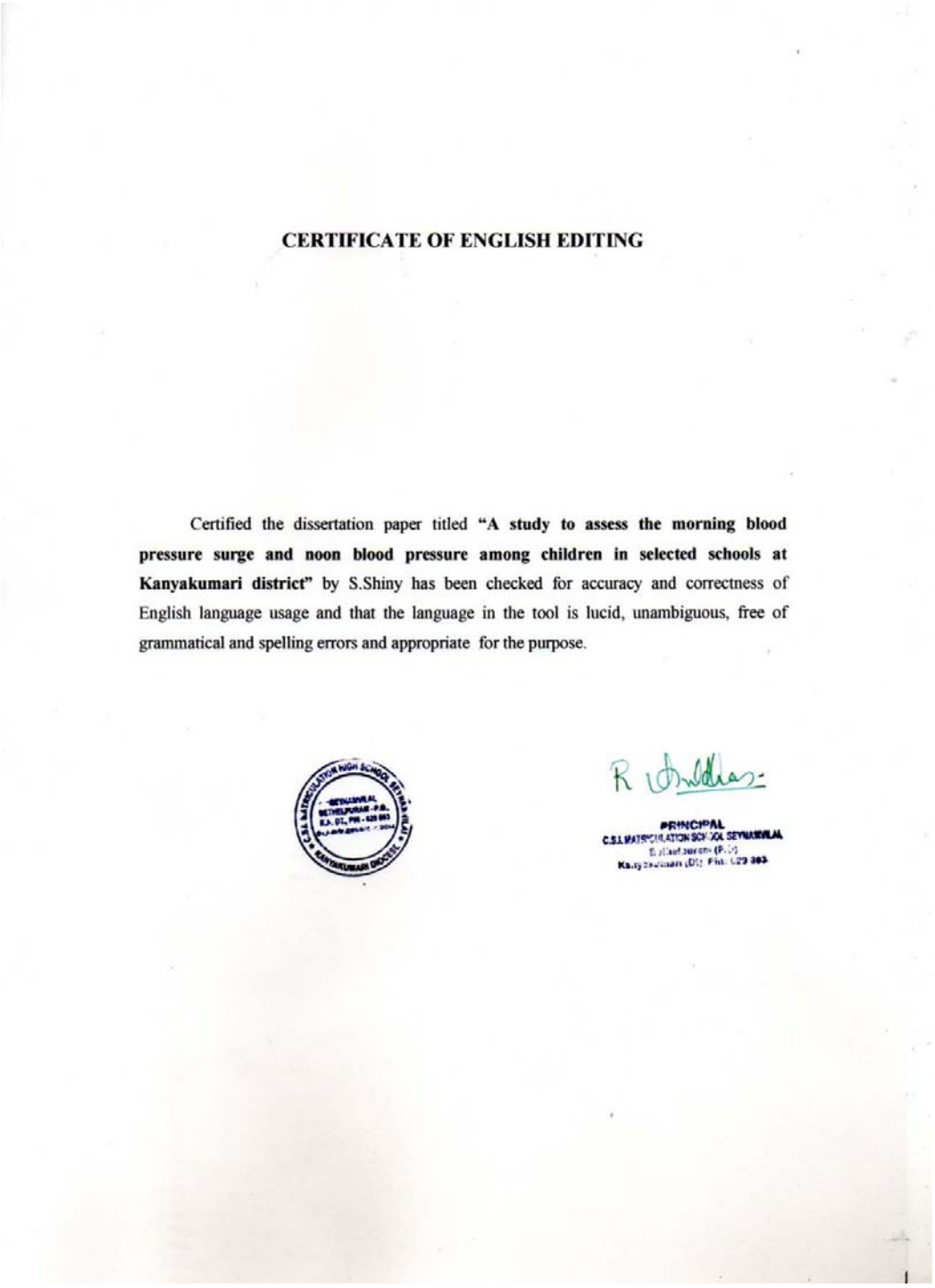
Standard deviation $$s = \sqrt{\frac{\sum \left(x - \dot{x}\right)^2}{n-1}}$$

Correlation co efficient $$r = \frac{\sum (X - \overline{X})(Y - \overline{Y})}{\sqrt{\sum (X - \overline{X})^2} \sqrt{\sum (Y - \overline{Y})^2}}$$

Chi-Square test $$x^2 = \sum \frac{\left(O - E\right)^2}{E}$$

ANNEXURE XIV

CERTIFICATE OF ENGLISH EDITING



CERTIFICATE OF ENGLISH EDITING

Certified the dissertation paper titled **"A study to assess the morning blood pressure surge and noon blood pressure among children in selected schools at Kanyakumari district"** by S.Shiny has been checked for accuracy and correctness of English language usage and that the language in the tool is lucid, unambiguous, free of grammatical and spelling errors and appropriate for the purpose.

PRINCIPAL
C.S.I. MATRICULATION SCHOOL SEYMAVILAI

ANNEXURE XV

TEACHING CONTENT ONBLOOD PRESSURE

INTRODUCTION

Blood pressure (BP) is the pressure exerted by circulating blood upon the walls of blood vessels. When used without further specification, "blood pressure" usually refers to the arterial pressure in the systemic circulation. It is usually measured at a person's upper arm. Blood pressure is usually expressed in terms of the systolic (maximum) pressure over diastolic (minimum) pressure and is measured in millimetres of mercury (mm Hg). It is one of the vital signs along with respiratory rate, heart rate, oxygen saturation, and body temperature. Normal resting blood pressure in an adult is approximately 120/80 mm Hg.

There are two types of blood pressure such as systolic blood pressure and Diastolic blood pressure. When the heart beats, it contracts and pushes blood through the arteries to the rest of the body. This force creates pressure on the arteries. This is called systolic blood pressure. A normal systolic blood pressure is below 110. The diastolic blood pressure number or the bottom number indicates the pressure in the arteries when the heart rests between beats. A normal diastolic blood pressure number is less than 70. High blood pressure is dangerous because it makes the heart work harder to pump blood out to the body and contributes to hardening of the arteries, or atherosclerosis, to stroke, kidney disease, and to the development of heart failure.

DEFINITION OF HIGH BLOOD PRESSURE

High blood pressure is a common disease in which blood flows through blood vessels (arteries) at higher than normal. It is otherwise called called hypertension.

CAUSES OF HIGH BLOOD PRESSURE

The exact causes of high blood pressure are not known, but several factors and conditions may play a role in its development, including:

- Being overweight or obese
- Lack of physical activity
- Too much salt in the diet
- Too much alcohol consumption
- Stress
- Genetics
- Family history of high blood pressure

- Chronic kidney disease

SIGNS AND SYMPTOMS OF HIGH BLOOD PRESSURE.

- Severe headache
- Severe anxiety
- Shortness of breath
- Dizziness,
- Blurred vision,
- Nausea
- Vomiting,
- chest pain

BLOOD PRESSURE MONITORING

Blood pressure is measured with a simple, painless test using a blood pressure cuff doctors call it a sphygmomanometer. It consists of a small pressure gauge that is attached to a cuff.

The inflatable cuff is wrapped around your upper arm. Some blood pressure cuffs wrap around the forearm or wrist.

When measuring blood pressure, your doctor or nurse will use a stethoscope to listen to the blood moving through an artery.

The cuff is inflated to a pressure that's known to be higher than your systolic blood pressure. As the cuff deflates, the first sound heard through the stethoscope is the systolic blood pressure. It sounds like a whooshing noise. When this noise goes away, that indicates the diastolic blood pressure.

The systolic blood pressure number is always said first, and then the diastolic blood pressure number is given. For example, your blood pressure may be read as "120 over 80" or written as 120/80.

Blood pressure is measured in millimeters of mercury (mm Hg).

TREATMENT

Treatment for hypertension comes in many forms from lifestyle changes to medication

Hypertension and Stress

Left unmanaged, stress can lead to emotional, psychological, and even physical problems, including coronary artery disease and high blood pressure. Get tips on the warning signs of dangerous stress and learn how to reduce it, while boosting a positive outlook.

Complementary and Alternative Treatment for Hypertension

There are many types of complementary and alternative treatments believed to be effective for treating hypertension. Get the facts on your options.

Calcium Channel Blockers

Calcium channel blockers are drugs used to lower blood pressure. They work by slowing the movement of calcium into the cells of the heart and blood vessel walls, which makes it easier for the heart to pump and widens blood vessels.

ACE Inhibitors

Angiotensin converting enzyme (ACE) inhibitors are high blood pressure drugs that widen or dilate your blood vessels to improve the amount of blood your heart pumps and lower blood pressure.

Angiotensin II Receptor Blockers (ARBs)

Angiotensin II receptor blockers (ARBs) have the same effects as ACE inhibitors, another type of blood pressure drug, but work by a different mechanism.

Diuretics (Water Pills)

For high blood pressure, diuretics, commonly known as "water pills," help your body get rid of unneeded water and salt through the urine. Getting rid of excess salt and fluid helps lower blood pressure and can make it easier for your heart to pump.

Beta-Blockers

Beta-blockers are drugs used to treat high blood pressure. They block the effects of the sympathetic nervous system on the heart.

Omega-3 Fish Oil Supplements

In the past 10 years, many Americans have turned to omega-3 fish oil supplements. Dietary fish and fish oil supplements have benefits for healthy people and also those with heart disease.

FOLLOW-UP CARE FOR HIGH BLOOD PRESSURE

- The most important element in managing high blood pressure is follow-up care. Here are six tips to keep in mind about follow-up care.
- Hypertension Management: In-Home Blood Pressure Monitoring
- Monitoring your own blood pressure is a good way to keep on top of hypertension. Get tips on how to prepare, and step-by-step instructions for taking your own blood pressure readings.
- High Blood Pressure Medication Guidelines: What You Want to Know
- If your doctor has prescribed medication to lower your blood pressure, here are twelve things to keep in mind about your treatment protocol.

PREVENTION

- **m**aintain a healthy weight
- eat a balanced diet
- cut back on salt
- exercise regularly
- limit the alcohol
- monitor the blood pressure
- enjoy regular physical activity
- lifestyle modifications are essential
- manage stress
- avoid smoking, tobacco.

COMPLICATION

- **Aneurysms:** When an abnormal bulge forms in the wall of an artery. Aneurysms develop and grow for years without causing signs or symptoms until they rupture, grow large enough to press on nearby body parts, or block blood flow. The signs and symptoms that develop depend on the location of the aneurysm.

- **Chronic Kidney Disease:** When blood vessels narrow in the kidneys, possibly causing kidney failure.

- **Cognitive Changes:** Research shows that over time, higher blood pressure numbers can lead to cognitive changes. Signs and symptoms include memory loss, difficulty finding words, and losing focus during conversations.

- **Eye Damage:** When blood vessels in the eyes burst or bleed. Signs and symptoms include vision changes or blindness.

- **Heart Attack:** When the flow of oxygen-rich blood to a section of heart muscle suddenly becomes blocked and the heart doesn't get oxygen. The most common warning symptoms of a heart attack are chest pain or discomfort, upper body discomfort, and shortness of breath.

- **Heart Failure:** When the heart can't pump enough blood to meet the body's needs. Common signs and symptoms of heart failure include shortness of breath or trouble breathing; feeling tired; and swelling in the ankles, feet, legs, abdomen, and veins in the neck.

- **Peripheral Artery Disease:** A disease in which plaque builds up in leg arteries and affects blood flow in the legs. When people have symptoms, the most common are pain, cramping, numbness, aching, or heaviness in the legs, feet, and buttocks after walking or climbing stairs.

- **Stroke:** When the flow of oxygen-rich blood to a portion of the brain is blocked. The symptoms of a stroke include sudden onset of weakness; paralysis or numbness of the face, arms, or legs; trouble speaking or understanding speech; and trouble seeing.

ANNEXURE XVI

PHOTOGRAPHS ON ASSESSMENT OF BLOOD PRESSURE